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## Phase 1 Geo-Environmental Desk Study

**Project:** 33a Vesper Road, Kirkstall, Leeds,  
LS5 3NU

**Client:** Ingenious Property Developments Ltd

**Reference:** B23391-JNP-XX-RP-G-1002

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# Phase 1 Geo-environmental Desk Study



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**FOR AND ON BEHALF OF JNP GROUP**

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## **1 INTRODUCTION**

- 1.1.1 jnp group was instructed by Mr Bhamani of Ingenious Property Developments Ltd to undertake a Phase I Geo -Environmental Desk Study at 33a Vesper Road, Kirkstall LS5 3NU (hereafter referred to as 'the site'). This report is subject to the limitations presented in Appendix A.
- 1.1.2 It is understood that the proposed works includes the repair of an existing dwelling as well as the potential development of a new two-storey dwelling at the site . without a turfed garden ??
- 1.1.3 Any comments given are based on the understanding that the proposed redevelopment will be as detailed above.

### **1.2 Objectives**

- 1.2.1 The purpose of the investigation was to address geo-environmental issues relating to a proposed residential end -use of the site. The scope of work comprised desk study research only . This report contains details of the site, development of an initial conceptual model, and a preliminary risk assessment with regard to contaminated land issues.

### **1.3 Methodology**

- 1.3.1 This report has been compiled in accordance with the on-line Land contamination: risk management (LCRM) guidance produced by the Environment Agency (June 2019). This can be found on the UK government website: <https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks>.
- 1.3.2

## 2 SITE DESCRIPTION

- 2.1.1 The site is located off Vesper Road in the sub urb of Kirkstall, approximately 4.5 km north -west of Leeds City Centre as shown on Figure 1 . It covers an area of 0.0667 ha and is centred on the grid reference 425650, 436731. Access to the site is via Vesper Road to the north.
- 2.1.2 The central western part of the site is occupied by a single-storey bungalow, which contains visible cracks in the brickwork indicating structural distress. The proposed two-storey new-build would potentially be located in the south-eastern area of the site; an area which is currently used as a garden area with raised flower beds and paved paths at various levels.
- 2.1.3 Ground levels on site are relatively variable due a number of raised flower beds and raised hardstanding areas containing a garage, greenhouse and a wooden shed. To the north and east of the existing dwelling are two lawn areas with paved paths situated between each raised area. Overall across the site, there is an elevation decrease by 4 m towards the south. There is a pathway that runs in a southerly direction to the east of the site that declines in slope the further south it gets, this is situated topographically below the site, indicating that levels of the site may be raised.
- 2.1.4 The surrounding land uses are summarised in the following table.

*Table 2.1: Surrounding Land Use*

Direction	Land Use
North	Vesper Road, residential beyond
East	Public footpath, residential beyond
South	Residential
West	Residential

### 3 GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

#### 3.1 Geology

- 3.1.1 The geology of the site has been determined by reference to the 1:50,000 scale British Geological Survey (BGS) online Geoindex Tool (<http://mapapps2.bgs.ac.uk/geoindex/home.html>).
- 3.1.2 Made Ground is not recorded underlying the site based on 1:50,000 BGS data. However, as the area of the site is anticipated to be raised compared to local topography, and the site has been developed, Made Ground is anticipated. There is an area of infilled ground, associated with an adjacent quarry, that has been identified on the south-west boundary of the site upon inspection of the 1:10,000 scale BGS maps.
- 3.1.3 No superficial deposits are anticipated to underly the majority of the site. The northern tip of the site is shown to be underlain by Harrogate Till Formation which is described by the BGS as '*slightly sandy clay with large local sandstone blocks*'.
- 3.1.4 The underlying bedrock geology is indicated to be Rough Rock Sandstone, which is described by the BGS as '*coarse-grained feldspathic sandstone, cross-bedded*'. The stratum is shown to dip towards the south-west.
- 3.1.5 There are two linear features that have been identified within 250 m of the site. The first is a fault located 14 m south of the site and the second is a fossil horizon situated 47 m south.
- 3.1.6 The following table details the risk of geological hazard potential on or underlying the site as identified in the Groundsure Report (included in Appendix B).

Table 3.1: Geological Hazards

Hazard	Risk
Shrinking or swelling clay	Negligible/ very low
Landslide ground	Very low
Ground dissolution	Negligible
Compressible soils	Negligible
Collapsible soils	Very low
Running sand	Negligible/ very low






The very low risks for shrinking or swelling clay are associated with the Harrogate Till Formation located on the northern boundary of the site; hence the majority of the site has a status of negligible for these risks. Geological hazards are not considered to present a constraint to development.

#### 3.2 BGS Borehole Records



- 3.2.1 jnp group has consulted online borehole records held by the BGS. There are no records of boreholes present within 250 m of the site.

#### 3.3 Background Soil Chemical Concentrations

- 3.3.1 The Groundsure Report (Appendix B) provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:










-  arsenic <15 mg/kg;
-  cadmium <1.8 mg/kg;
-  chromium 60 – 90 mg/kg;
-  lead <100 mg/kg;
-  nickel 15 – 30 mg/kg

3.3.2 In addition, the UK Soil Observatory map viewer (<http://www.ukso.org/mapViewer.html>) provides an indication to the background concentrations of a number of metallic contaminants commonly recorded in soils:

-  arsenic 21.55 mg/kg;
-  cadmium 0.82 mg/kg;
-  chromium 123.59 mg/kg;
-  copper 107.64 mg/kg;
-  lead 135.81 mg/kg;
-  nickel 30.61 mg/kg;
-  zinc 192.72 mg/kg

3.3.3 Therefore, naturally elevated concentrations of metals are anticipated at the site or in close proximity.

### 3.4 Ground Workings, Mining History and Natural Cavities

-  There are nine records of historical surface ground workings ranging from on site to 73 m west of the site. These are all identified as unspecified quarries dated from 1892 to 1992.
-  There are no records of historical underground working features within 250 m of the site.
-  There are two current ground workings recorded within 100 m of the site. These are located 41 m west and 92 m west of the site respectively. These are both surface mineral workings for sandstone and have a status of ceased.
-  The site lies within a Coal Mining Reporting Area. From a review of the local geology and also from consideration of online data at the Coal Authority interactive viewer website (<https://mapapps2.bgs.ac.uk/coalauthority/home.html>) the site is not within any areas containing 'underground workings' or 'probable underground workings' of coal. Neither are there any coal outcrops or mine entries on-site.
-  There are three records of non-coal mining areas within 1 km of the site. Mining for Vein Mineral has been identified on-site in the location of the historical quarry and 735 m west of the site. The third record is located 884 m south-east of the site at Elland Flag Mines. Mining for Sandstone 'is known or considered likely to have occurred'.
-  There are no non-coal mining cavities located within 500 m of the site;
-  There are no natural cavities located within 250 m of the site;
-  No brine or gypsum extraction has occurred within 1 km of the site;
-  No tin or clay mining areas are recorded within 1 km of the site.

### 3.5 Hydrology

- 3.5.1 The River Aire is located approximately 515 m south-east of the site and flows in a west to east direction.
- 3.5.2 The site lies in an area considered by the Environment Agency to be at a very low risk of fluvial flooding. This indicates less than 1 in 1000 chance of flooding in a given year.
- 3.5.3 There are no active surface water abstraction licences within 500 m of the site.

### 3.6 Hydrogeology

- 3.6.1 The Aquifer Maps contained in the Groundsure Report indicates a Secondary (undifferentiated) Aquifer (Harrogate Till Formation) located on the northern boundary of the site. There are no superficial deposits underlying the majority of the site. The Rough Rock Sandstone is identified as a Secondary -A Aquifer.
- 3.6.2 The Environment Agency define a Secondary -Undifferentiated Aquifer as:  
*“Aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value”*
- 3.6.3 The Environment Agency define a Secondary-A Aquifer as:  
*“Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.”*
- 3.6.4 The overlying soils are classified as having a high leaching potential, although this is uncertain, as a worst-case vulnerability classification is assumed by the Environment Agency (EA) for urban areas.
- 3.6.5 There are no Groundwater Abstraction Licences that have been identified within 1 km of the site.
- 3.6.6 No Groundwater Source Protection Zones were identified with 500 m of the site.

## 4 SITE HISTORY

4.1.1 The history of the site and the surrounding area has been determined from historical map extracts. Copies of these extracts are included in Appendix C. The historical land uses on site and in close proximity to the site are summarised in the following table:

*Table 4.1: Site History Summary*

Date	On-site Historical Land Use	Off-site Historical Land Use
1851	The site was located within Hawksworth Wood. A footpath ran in a north-south direction in the centre of the site.	The surrounding area was predominantly undeveloped, there is a railway embankment 250 m east, running in north-west / south-east orientation. Forge Quarry was located 400 m south-west of the site.
1892	The footpath was no longer identified as running through the site. A (probable sandstone) quarry with an associated building and pond was developed partly on-site and immediately west of the site.	Hawksworth Quarry was 600 m north of the site and an unnamed quarry (partially on-site) was identified immediately west of the site.
1906	No significant changes noted.	The surrounding area to the north and east was developed with residential buildings along Vesper Road (immediately north of the site).
1908	No significant changes noted.	No significant changes noted.
1921	No significant changes noted.	No significant changes noted.
1934	No significant changes noted.	Further residential development was progressed 100 m north-west.
1938	No significant changes noted.	There was new residential development 100 m to the north.
1953	The unnamed quarry on-site and to the west was annotated as Old Quarry.	There was residential development from 100 m south.
1956	No significant changes noted.	Forge Quarry and Hawksworth Quarry are no longer depicted and have likely been backfilled.
1962-1967	Old Quarry and the pond are no longer depicted on-site and have likely been backfilled.	The majority of the unnamed quarry immediately west of the site is no longer identified on site and has likely been backfilled. Remains of the quarry were present 60 m west. There was new residential development 30 m south-west.
1968-1973	The current on-site bungalow was constructed	There were residential buildings immediately surrounding the site.
1987-2020	No significant changes noted.	No significant changes noted.

### 4.2 Site History Summary

4.2.1 The site was shown to be located in undeveloped woodland from the earliest maps available, 1851. The site was located within Hawksworth Wood until 1908 and was left undeveloped due to its proximity to an unnamed (probable Sandstone) quarry which partly covered the west of the site. After the closure of the quarry in 1966, the current bungalow was built in the late 1960s to early 1970s.

- 4.2.2 The 1851 maps show that undeveloped woodland occupied the surrounding area of the site except for three sandstone quarries: Forge Quarry located south-west of the site, Hawksworth Quarry located north of the site and an unnamed quarry immediately west of the site. However, as the area started to be developed into a residential area from 1906 onwards, the quarries closed by 1966 .

## **5 INFORMATION HELD BY STATUTORY AUTHORITIES**

5.1.1 This section details any relevant information held in the registers maintained by statutory bodies as identified in the Groundsure Report (Appendix B).

### **5.2 Waste Management Facilities**




5.2.1 The Groundsure Report identified one licensed waste management facility located within 1 km of the site. This is a landfill for non-biodegradable waste and is located 948 m north of the site in Horsforth.

5.2.2 There are three historical landfills recorded within 500 m of the site. The first is located 59 m north-west of the site on Vesper Road, relating to Old Quarry. The other two are associated with Forge Quarry, 287 m west, and Briggs Quarry, 454 m west, which are both located on Abbey Road.

5.2.3 There is one record of a Landfill from Local Authority and Historical Mapping Records within 500 m of the site. This was a refuge tip located 383 m west of the site and can be seen on the 1972 Ordnance Survey map.


### **5.3 Historical IPC, IPPC Part A and B Activities and Enforcements**

5.3.1 The Groundsure Report indicates that:

-  There are no historical IPC authorisations within 500 m of the study site;
-  There are no Part A (1) and IPPC authorised activities within 500 m of the site;
-  There are no Part A (2) and Part B activities and enforcements within 500 m of the site.

### **5.4 Pollution Incidents to Controlled Waters**

5.4.1 Records held by the Environment Agency identified one pollution incidents to controlled waters within 500 m of the site.

-  Located 229 m east of the site, category 4 (no impact) to land and category 3 (minor impact) to water and air from a contaminated water pollution incident was recorded in September 2001.

### **5.5 Discharge Consents**





5.5.1 The Groundsure Report identified four active licensed discharge consents within 500 m of the site. The closest to the site was located 295 m east, the discharge was recorded as sewer storm overflow, the receiving water was a culverted tributary of the River Aire.

### **5.6 Fuel Sites**

5.6.1 The Groundsure Report identifies no records of petrol or fuel sites within 500 m of the study site.

### **5.7 Historical and Contemporary Industrial Data**

5.7.1 The Groundsure Report identifies four potentially contaminative industrial sites within 250 m of the site. They are summarised as follows:

-  A gas governor station is located 16 m east of the site;
-  An electricity sub-station is located 55 m east of the site;
-  A disused quarry is located 100 m west of the site; and
-  Regency Recovery, a vehicle breakdown and recovery service, is located 223m east of the site.



## **5.8 Radon**




- 5.8.1 The Groundsure Report states that the Health Protection Agency identified less than 1% of homes above the action level. The British Geological Survey Information Services Group indicates that no radon protection measures are necessary.
- 5.8.2 Reference to BRE211 'Radon: guidance on protective measures for new dwellings' indicates that the site does not lie within an area where geological information indicates that basic radon protection may be required. Therefore, no radon protection measures are considered necessary.

## **5.9 Environmentally Sensitive Areas**

- 5.9.1 There two records of green belt land located with 2 km of the siteThe nearest is identified as Liverpool, Manchester and West York's Greenbelt, 78 m south-east which is under the Leeds Local Authority.
- 5.9.2 The Leeds-Liverpool Canal which is located 588 m south-west of the site is identified as a Site of Scientific Interest (SSSI) by Natural England.
- 5.9.3 Natural England identified Hawksworth wood an Ancient Woodland and is located 808 m north-west of the site.



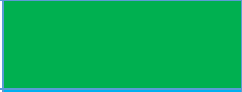

## 6 UK CONTAMINATED LAND LEGISLATIVE FRAMEWORK

### 6.1 Legislation on Contaminated Land

- 6.1.1 Given that the site is being assessed with the potential for future development, the most applicable appraisal relates to the requirements of the Planning Regime as described in the National Planning Policy Framework. In order to proceed with an assessment of contamination issues it is essential that there is compliance with UK guidance as detailed within reports published by the Environment Agency 'Model Procedures for the Management of Land Contamination' (Environment Agency, 2004), and 'Guiding Principles for Land Contamination' (Environment Agency, 2010).
- 6.1.2 Part IIA of the Environmental Protection Act, 1990, which was enacted by Section 57 of the Environment Act 1995, and the associated Contaminated Land (England) Regulations 2000 (SI 2000/227), was introduced on 1 April 2000. It created a new statutory regime for the identification and remediation of land where contamination poses an unacceptable risk to human health and the environment. The guidance was subject to a review by DEFRA in 2012, and a revision was published.
- 6.1.3 Part IIA provides a statutory definition of contaminated land:  
*"any land which appears to the Local Authority in whose area it is situated to be in such a condition by reason of substances in, on or under the land, that significant harm is being caused, or that there is a significant possibility of significant harm being caused, or that pollution of controlled waters is being or is likely to be caused".*
- 6.1.4 Controlled waters are considered to be all groundwaters, inland surface waters, and estuarine and coastal waters.
- 6.1.5 To determine whether land falls under the Part IIA definition of contaminated land, the site should be evaluated in the context of a risk based framework. The assessment of contaminated land is typically a two-phase process, which is initially based on a qualitative assessment of the likelihood of complete pollution linkages, with a quantitative element that seeks to determine the degree and the significance of the harm. Land is only defined as 'Contaminated Land' if a "significant pollutant linkage" is present.
- 6.1.6 A pollutant linkage must comprise the following:  
**Source** - a contaminant at a concentration capable of causing adverse health or environmental effects.  
**Receptor** - there must be a receptor (e.g. human, controlled waters, ecological, or property) present, which may be at risk of harm or impact from the source.  
**Pathway** - there must be an exposure pathway through which the receptor comes into contact with the contamination source.
- 6.1.7 Each of these elements can exist independently, but they create risk only when they are linked together, so that a particular contaminant affects a particular receptor, through a particular pathway.
- 6.1.8 The responsible authority then needs to consider whether the identified pollution linkage:  
 is resulting in significant harm being caused to the receptor in the pollutant linkage;  
 presents a significant possibility of significant harm being caused to that receptor;  
 is resulting in the pollution of controlled waters, which constitute the receptor; or is likely to result in such pollution.
- 6.1.9 If a pollutant linkage is demonstrated, then the Part IIA legislation provides powers for remedial action to be enforced by the Local Authority in whose area the contaminated land is situated.
- 6.1.10 In addition, **jnp group** has undertaken a preliminary risk assessment based on the **probability** of receptor exposure to the identified source and the **consequences** of such exposure.

6.1.11 **Risk management**, which can include site surfacing, formal management systems, legal requirements; is then considered to provide an overall residual risk. The categories of environmental risk used by jnp group are given in Table 6.1 that follows.

*Table 6.1: Risk Matrix*

Environmental Risks		
HIGH		Issues within this category likely to provide a significant cost or liability. Further detailed investigation may be required to clarify the risk.
MEDIUM		It is possible that issues within this category may provide a cost or liability. Further investigation may be required to clarify the risk.
LOW		It is unlikely that issues within this category will provide a significant cost or liability. Basic investigation may be required to clarify the risk.
NONE		No source – pathway – receptor linkage present.

## 7 CONCEPTUAL MODEL AND PRELIMINARY RISK ASSESSMENT

### 7.1 General

- 7.1.1 This section uses information from desk -based sources to provide a conceptual model and qualitative assessment of the potential risks posed to human health and environmental receptors from potential on-site and off-site sources of contamination. The assessment is presented as a 'source-pathway-receptor' model in accordance with Part IIA of the Environmental Protection Act 1990.
- 7.1.2 The conceptual model has been developed assuming that the site development includes the repair of an existing building and the potential development of a new two-storey dwelling at the site.

### 7.2 Potential Sources of Contamination

#### Potential On-site Sources of Contamination

- A quarry is known to be present partly on site and immediately west of the site between 1892 and 1966 when it was expected to have been backfilled; contamination (metals, asbestos, PAHs, TPH) cannot be ruled out of being present within this backfilled material, the backfill may also be a source of ground gas generation.
- In accordance with C733 guidance, any structure built, refurbished or modified during the Twentieth Century has the potential to contain asbestos containing materials (ACM). In addition, any demolition material either stockpiled or used as backfill on site also has the potential to contain asbestos containing materials (intact or broken up).

#### Potential Off-Site Sources of Contamination

- The partially on-site quarry was also backfilled in off-site areas, this is also a potential source of leachate and ground gas generation that may affect the site.

### 7.3 Receptors

- 7.3.1 The site development includes the repairs to an existing bungalow and the potential development of a two-storey dwelling in the south-eastern area of the site.

#### Human Health

- Construction workers during the redevelopment and potential construction phase;
- residential end users.

#### Controlled Waters

- The site is not underlain by superficial deposits and the Rough Rock Sandstone bedrock is considered a Secondary-A Aquifer. jnp group consider groundwater to be a sensitive receptor;
- The River Aire is located 500 m south of the site and flows in a west-east direction. jnp group do not consider this to be a sensitive receptor due to its distance from site .

#### Ecological

- The site is not located within an environmentally designated sensitive area;
- Given the site setting, sensitive species are considered unlikely to be present at the site (subject to any ecological survey undertaken).






#### Property

- Concrete sulphate attack;
- Build-up of gases with potential for explosion.


## 7.4 Pathways

7.4.1 Potential contaminant migration pathways considered relevant to the site are:




### Human Health

-  Ingestion of contaminated soils and dust particles;
-  Direct physical contact with near surface soils and contaminated dust particles;
-  Inhalation of wind-blown contaminated dust;
-  Inhalation of vapours and gases, migrating vertically into the atmosphere;
-  Inhalation of vapours and gases, migrating into buildings and confined spaces;






### Infrastructure

-  Water supply pipework

### Controlled Waters

-  Leaching of contaminants into shallow groundwater;
-  Vertical migration of contaminated shallow groundwater impacting deeper groundwater in the aquifer sequence;
-  Lateral and Vertical mitigation of groundwater into the River Aire

### Ecological

-  Migration of contamination through groundwater and subsequent uptake by plant roots;
-  Direct contact between ecological receptors and contaminated surface water;
-  Direct contact between ecological receptors and contaminated soils;
-  Ingestion of contaminated soils/surface waters by ecological receptors;
-  Inhalation of vapours or wind-blown dust by ecological receptors.

## 7.5 Pollutant Linkages

7.5.1 A 'pollutant linkage' describes the relationship between a contaminant, a pathway and a receptor, a 'pollutant' being the contaminant in a pollutant linkage. A contaminant, pathway and receptor must all be present for a pollutant linkage to exist, which forms the basis for determination that a piece of land is Contaminated Land. Potential sources, pathways and receptors have been assessed. The following table summarises the significant pollutant linkages potentially active at the site.

*Table 7.1: Potential Source-Pathway-Receptor Linkages for Human Health Risk Assessment*

Source	Pathway	Receptor
Contaminated soils	Dermal contact	On site female child: 0 - 6 yrs old On site construction worker
	Dermal contact with household dust	On site female child: 0 - 6 yrs old
	Inhalation of fugitive soil dust	On site construction worker On site female child: 0 - 6 yrs old
	Inhalation of fugitive household dust	On site female child: 0 - 6 yrs old
	Inhalation of vapours in outdoor air	On site female child: 0 - 6 yrs old On site construction worker
	Inhalation of vapours in indoor air	On site female child: 0 - 6 yrs old

	Contact with contaminated soils	Water supply pipework
Ground Gas	Vertical and Lateral Migration	End Users
		Residential Property
		Services and Infrastructure

*Table 7.2: Source Pathway Receptor Linkages for Controlled Waters Risk Assessment*

Source	Pathway	Receptor
Contaminated soils	Leaching Mechanisms	Groundwater stored in the Rough Rock Sandstone
	Run-off during construction works	River Aire
Contaminated groundwater	Vertical migration	Groundwater stored in the Rough Rock Sandstone
	Lateral and Vertical mitigation (baseflow)	River Aire

## 7.6 Preliminary Risk Assessment

7.6.1 From the information obtained from the desk study jnp group has undertaken a preliminary risk assessment.

*Table 7.3: Preliminary Risk Assessment*

Issue	Risk		Justification
<b>LAND</b>	MEDIUM		The site was situated on part of a former quarry, which has been backfilled, contamination within the Made Ground beneath the site cannot be ruled out. Gas monitoring is also recommended as the Made Ground could be a source of ground gas generation.
<b>GROUNDWATER</b>	MEDIUM		Potential contamination on-site and it is located on a Secondary-A Aquifer.
<b>SURFACE WATER</b>	LOW		There are no surface water features with 250m.
<b>ECOLOGY</b>	NONE		Based on the assumption that there are no sensitive/ protected species on site (subject to any ecological survey undertaken).

7.6.2 The conceptual model has been refined and the plausible pollutant linkages evaluated against generic criteria in accordance with joint DEFRA / Environment Agency publication 'Model Procedures for the Management of Land Contamination' (Environment Agency. 2004).







## 8 CONCLUSIONS

### 8.1 Conclusions

- 8.1.1 The desk study has identified that the geological succession below the site is likely to comprise Made Ground as a result of building construction and infilling the former on-site quarry over Rough Rock Sandstone bedrock.
- 8.1.2 Based on information contained within the desk study, it is the opinion of **jnp group** that the potential site conditions provide a **MODERATE** environmental risk and, dependent on the final development proposal for the site, further investigation and assessment will be required.

### 8.2 Recommendations

- 8.2.1 Based on the conclusions from the desk study and the intended redevelopment of the site **jnp group** recommend that the following intrusive works are undertaken initially:
-  Ground investigation to confirm underlying ground conditions. This is likely to require deeper cable percussive drilling due to the likely requirement for piled foundations. The works should include a range of chemical analysis covering a range of determinants including, heavy metals, hydrocarbons and asbestos, TPH and Volatile Organic Compounds, Semi Volatile Organic Compounds may also be required, subject to ground observations.
  -  The installation of gas monitoring standpipes with six monitoring visits undertaken over two or three months.
- 8.2.2 **jnp group** recommends that the scope of the intrusive works is agreed with the Regulatory Authorities as they may have particular requirements that need to be taken into account.

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## Figures / Drawings





# Figure 1

## Site Location Plan

Project:

33a Vesper Road, Kirkstall

Project No:

B23391



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# Appendix A

## Limitations



## Introduction

This report is confidential and has been prepared solely for the benefit of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from **jnp group**; a charge may be levied against such approval. **jnp group** accepts no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned, and: this document to any third party with whom and agreement has not been executed.

Any comments given within this report are based on the understanding that the proposed works to be undertaken will be as described in the introduction and the information referred to and provided by others and will be assumed to be correct and will not have been checked by **jnp group** and **jnp group** will not accept any liability or responsibility for any inaccuracy in such information.

Any deviation from the recommendations or conclusions contained in this report should be referred to **jnp group** in writing for comment and **jnp group** reserve the right to reconsider their recommendations and conclusions contained within. **jnp group** will not accept any liability or responsibility for any changes or deviations from the recommendations noted in this report without prior consultation and our full approval.

The details contained within this report reflect the site conditions prevailing at the time of investigation. **jnp group** warrants the accuracy of this report up to and including that date. Additional information, improved practice or changes in legislation may necessitate this report having to be reviewed in whole or in part after that date. If necessary, this report should be referred back to **jnp group** for re-assessment and, if necessary, re-appraisal.

This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report. Whilst this report and the opinion made herein are correct to the best of **jnp groups'** belief, **jnp group** cannot guarantee the accuracy or completeness of any information provided by third parties.

The report represents the finding and opinions of experience geotechnical and geo-environmental engineers. **jnp group** does not provide legal advice and the advice of lawyers may also be required.

It should be noted that the following were not included as part of the agreed scope of works with the client: detailed ecological surveys and assessment; groundwater monitoring and sampling; geotechnical requirements etc.

**jnp group** has provided advice and made recommendations based on the findings of the work undertaken, however this is subject to the approval / acceptance by the relevant Regulatory Authorities.

## Objectives

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, **jnp group** reserves the right to review such information and, if warranted, to modify the opinions accordingly. It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

---



# Appendix B

## Groundsure Report





JNP Group

J N P, UNIT 1, MEADOWHALL ROAD,  
SHEFFIELD, S9 1BW

Groundsure Reference: GS-6567186

Your Reference: B23391

Report Date: 21 Jan 2020

Report Delivery Method: Email - pdf

## Geo Insight

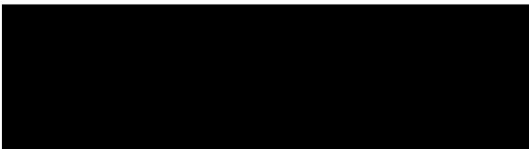
Address: 33A, VESPER ROAD, KIRKSTALL, LEEDS, LS5 3NU

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director  
Groundsure Limited

Enc.  
Groundsure Geo Insight

Address: 33A, VESPER ROAD, KIRKSTALL, LEEDS, LS5 3NU  
Date: 21 Jan 2020  
Reference: GS-6567186  
Client: JNP Group

NW N NE

W E



SW S SE

Aerial Photograph Capture date: 17-Jul-2017  
Grid Reference: 425753,436727  
Site Size: 0.0667ha

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# Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes
Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

## Section 2: Geology 1:50,000 Scale

### 2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site\* see the detailed findings section.

2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

Yes

## Section 3: Radon

### 3. Radon

3.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?

The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

3.2 Radon Protection

No radon protective measures are necessary.

## Section 4: Ground Workings

	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	4	1	4	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	1	1	1	25

## Section 5: Mining, Extraction & Natural Cavities

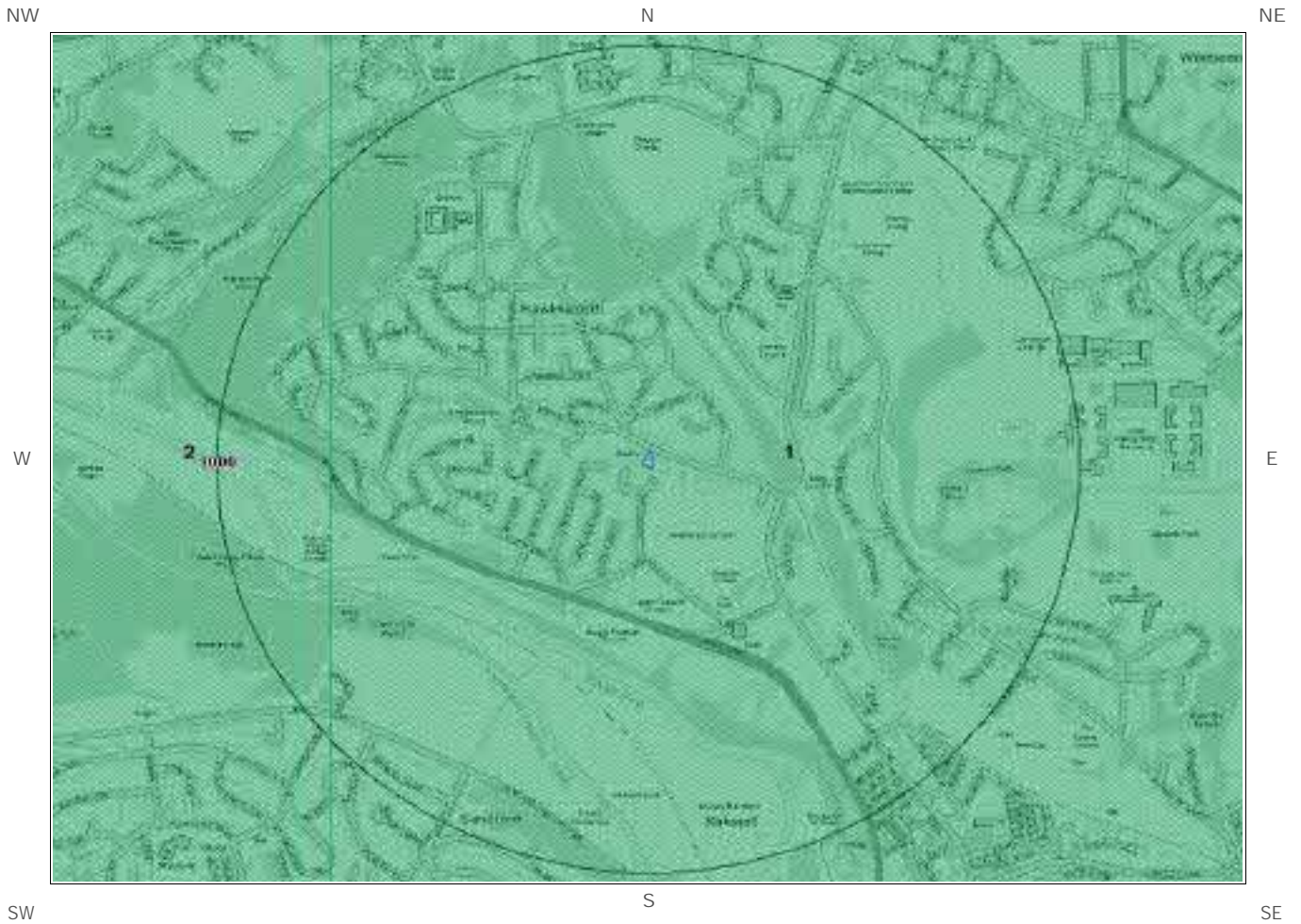
	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	1	0	0	0	2
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0



Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Cornwall and Devon Metalliferous Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
<b>Section 6: Natural Ground Subsidence</b>					
	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Very Low				
<b>Section 7: Borehole Records</b>					
	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	0		
<b>Section 8: Estimated Background Soil Chemistry</b>					
	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	2	2	0		
<b>Section 9: Railways and Tunnels</b>					
	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	2	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

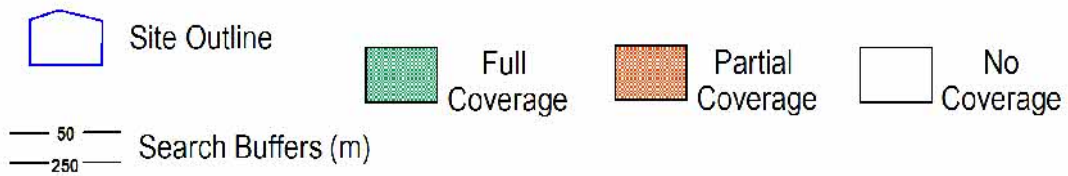


# 1:10,000 Scale Availability



1\_10,000 Availability Legend

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# Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
2	735.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N3	1689.0	Some deposits are mapped	Full	Full	No coverage
N4	1850.0	Some deposits are mapped	Full	Full	Some deposits are mapped

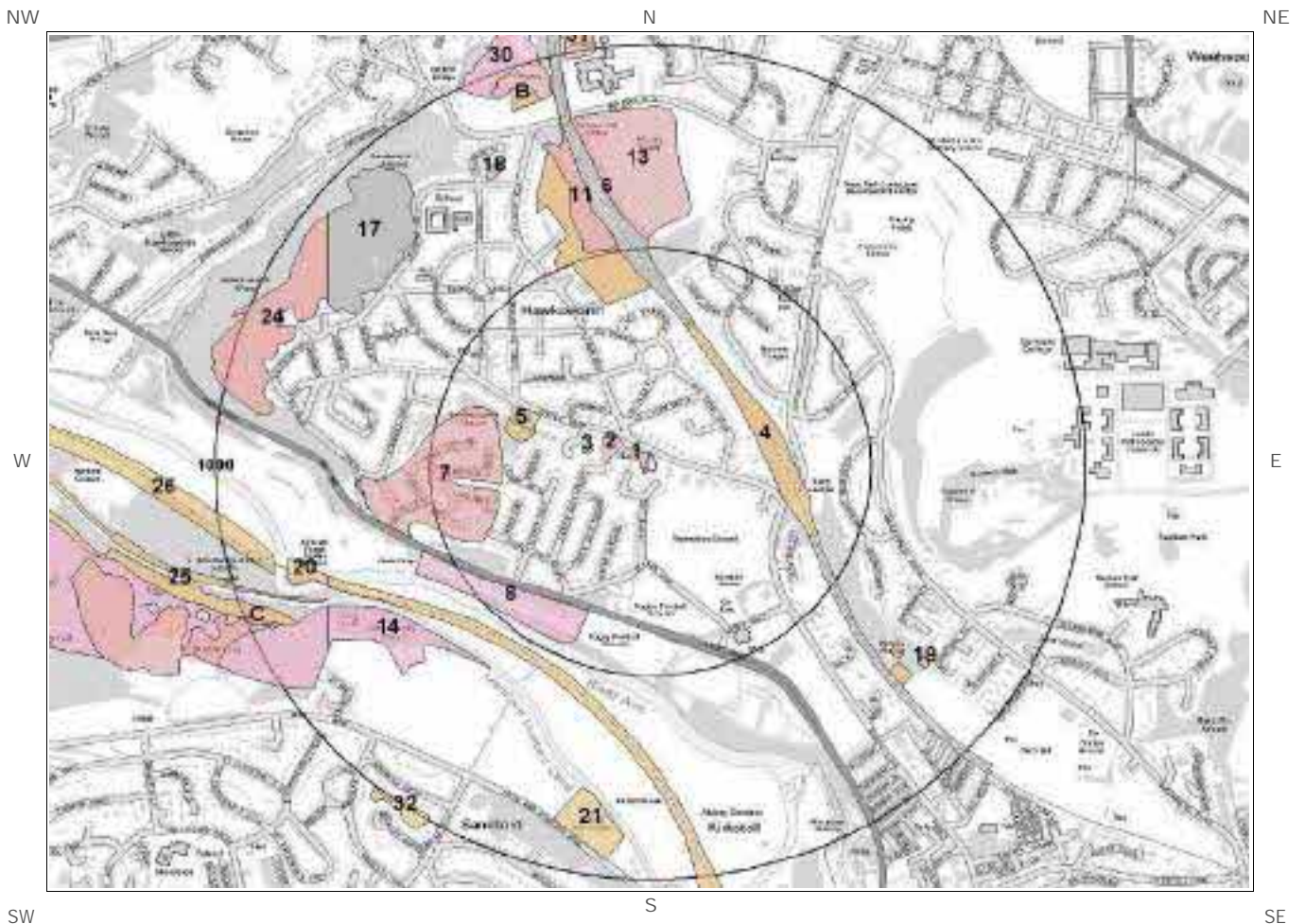
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

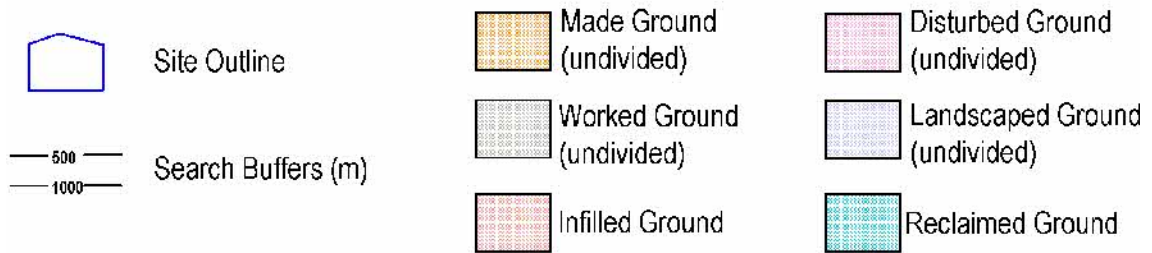
# 1 Geology (1:10,000 scale).

# 1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

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# 1. Geology 1:10,000 scale

## 1.1 Artificial Ground

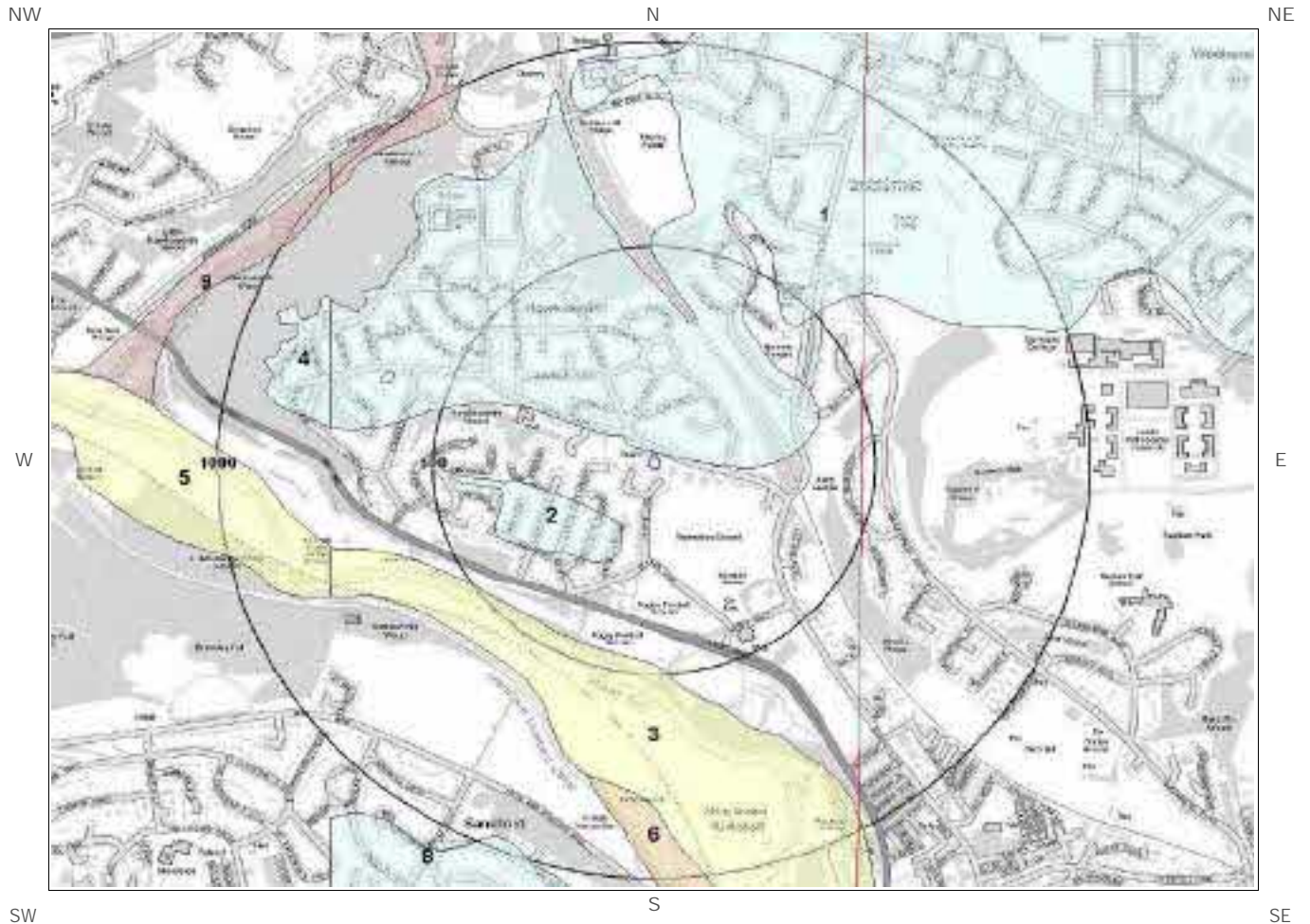
The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	69.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
3	130.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
4	233.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	271.0	W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	324.0	N	WGR-VOID	Worked Ground (Undivided)	Void
7	333.0	W	WMGR-ARTDP	Infilled Ground	Artificial Deposit
8	372.0	SW	DDGR- UNKNOWN	Disturbed Ground (Undivided)	Unknown/unclassified Entry
9	379.0	N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10A	394.0	SE	WGR-VOID	Worked Ground (Undivided)	Void

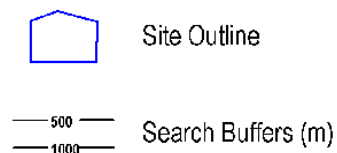


# 1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

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# 1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

## 1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	TILL-DMTN	Till - Diamicton	Diamicton
2	152.0	SW	TILL-DMTN	Till - Diamicton	Diamicton
3	454.0	SW	ALV-XCSV	Alluvium - Clay, Sand And Gravel	Clay, Sand And Gravel

## 1.2.2 Landslip

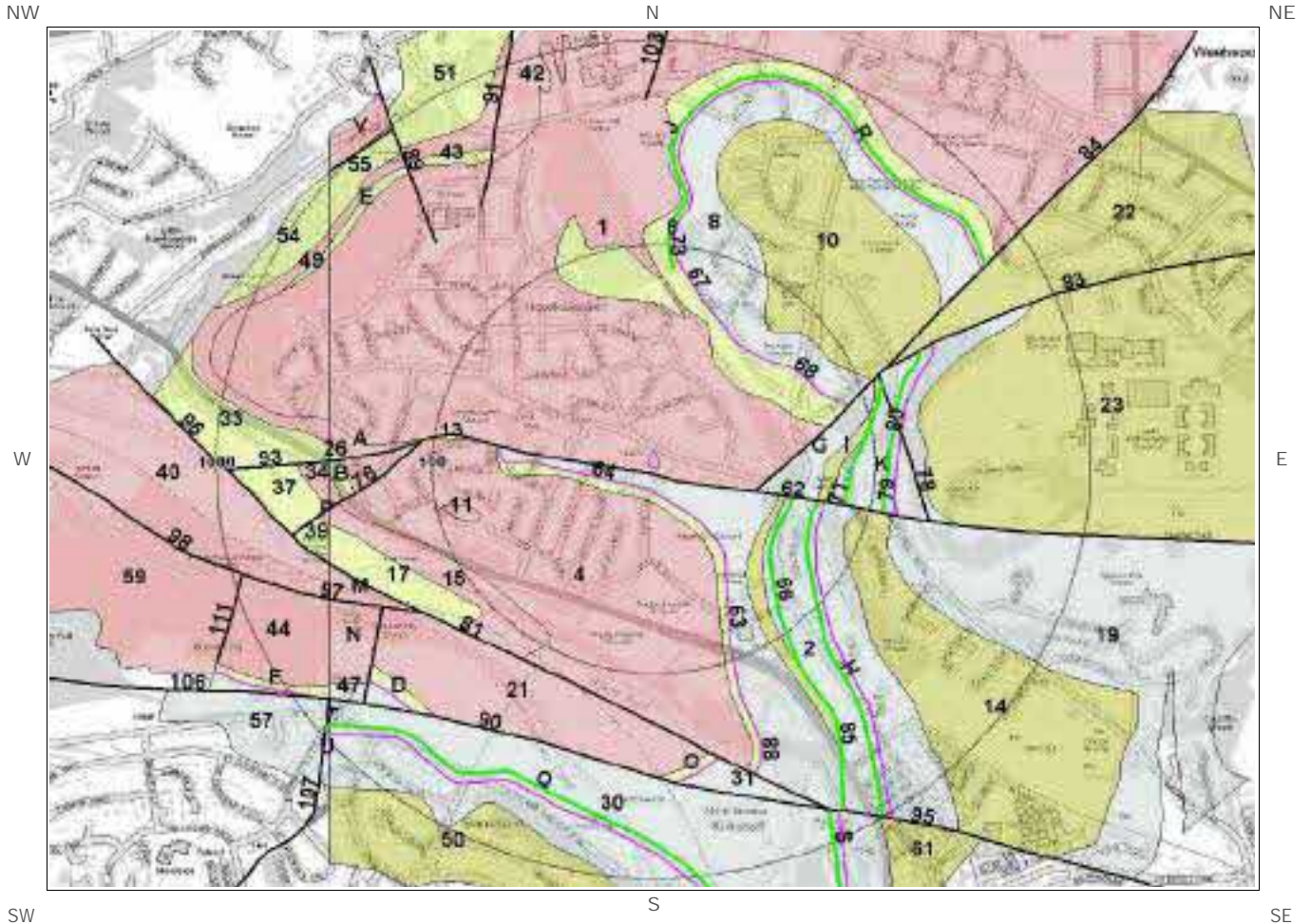
Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

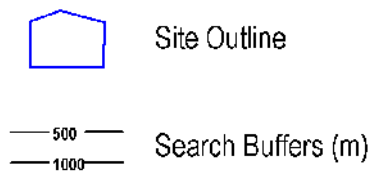
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

# 1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

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# 1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

## 1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
2	14.0	S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
3	52.0	SW	MG-CYCMG	Millstone Grit Group [see Also Migr] - Sedimentary Rock Cycles, Millstone Grit Type	Namurian Age
4	79.0	S	RR-SDST	Rough Rock - Sandstone	Yeadonian Sub-age
5G	232.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
6	244.0	NE	MG-CYCMG	Millstone Grit Group [see Also Migr] - Sedimentary Rock Cycles, Millstone Grit Type	Namurian Age
7	281.0	SE	SBF-SDST	Soft Bed Flags - Sandstone	Langsettian Sub-age
8	323.0	NE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
9I	377.0	E	SBF-SDST	Soft Bed Flags - Sandstone	Langsettian Sub-age
10	396.0	NE	SBF-SDST	Soft Bed Flags - Sandstone	Langsettian Sub-age
11	408.0	W	RF-SDST	Rough Rock Flags - Sandstone	Yeadonian Sub-age
12K	409.0	E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
13	415.0	W	MG-CYCMG	Millstone Grit Group [see Also Migr] - Sedimentary Rock Cycles, Millstone Grit Type	Namurian Age
14	456.0	E	STNR-SDST	Stanningley Rock - Sandstone	Langsettian Sub-age
15	457.0	SW	RF-SDST	Rough Rock Flags - Sandstone	Yeadonian Sub-age

## 1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?  Yes

ID	Distance (m)	Direction	Category Description	Feature Description
62	14.0	S	FAULT	Normal fault, inferred
63	52.0	SW	FOSSIL_HORIZON	Fossil horizon, marine band
64	52.0	SW	FOSSIL_HORIZON	Fossil horizon, marine band
65G	232.0	E	FAULT	Normal fault, inferred
66	315.0	SE	ROCK	Coal seam, inferred
67	323.0	NE	FOSSIL_HORIZON	Fossil horizon, marine band
68	323.0	NE	FOSSIL_HORIZON	Fossil horizon, marine band
69H	373.0	E	ROCK	Coal seam, inferred

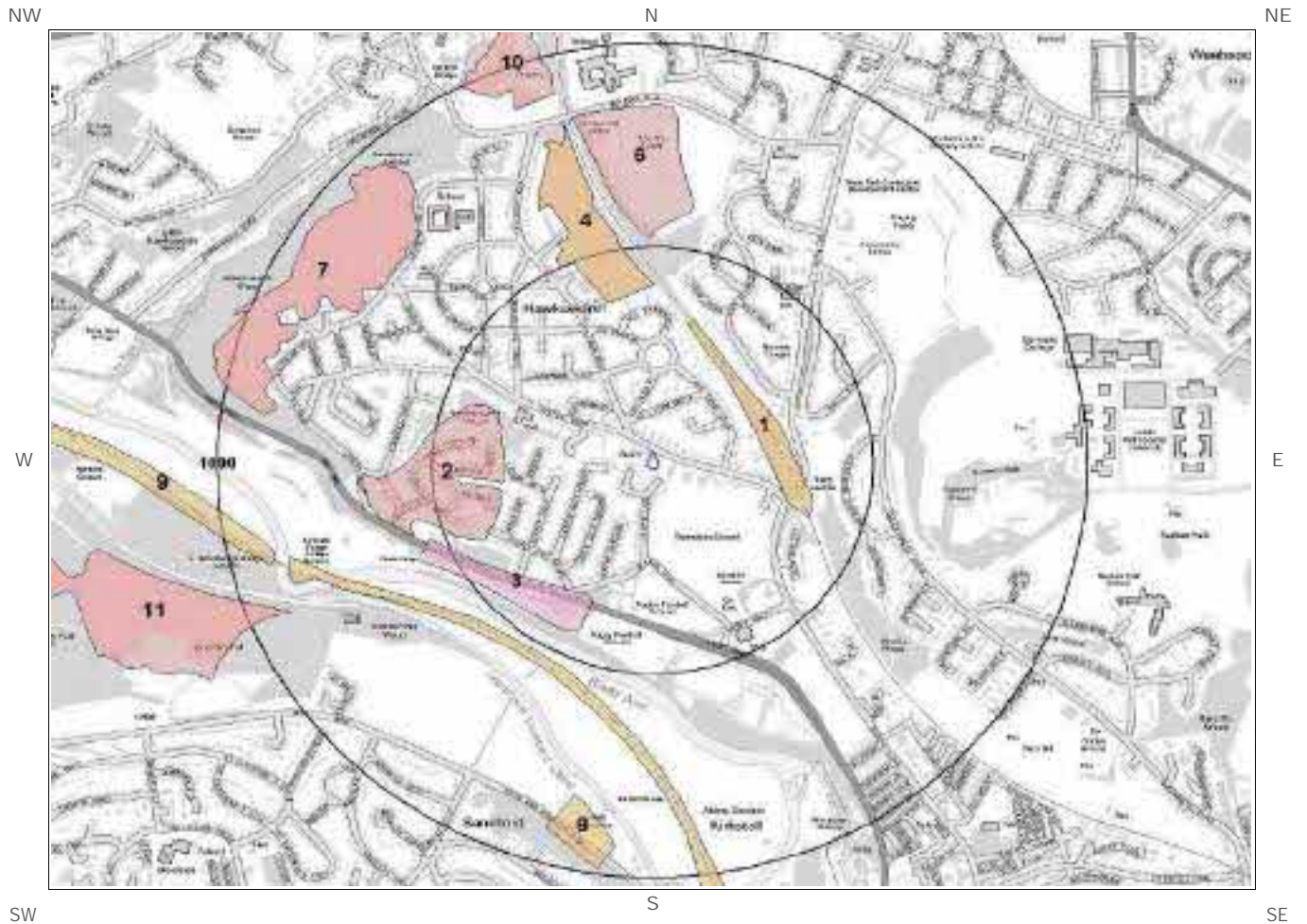
ID	Distance (m)	Direction	Category Description	Feature Description
70H	394.0	E	FOSSIL_HORIZON	Fossil horizon, marine band
71	439.0	E	ROCK	Coal seam, inferred
72I	443.0	E	ROCK	Coal seam, inferred
73	446.0	N	ROCK	Coal seam, inferred

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

# 2 Geology 1:50,000 Scale

## 2.1 Artificial Ground map



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## 2. Geology 1:50,000 scale

### 2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 069

#### 2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

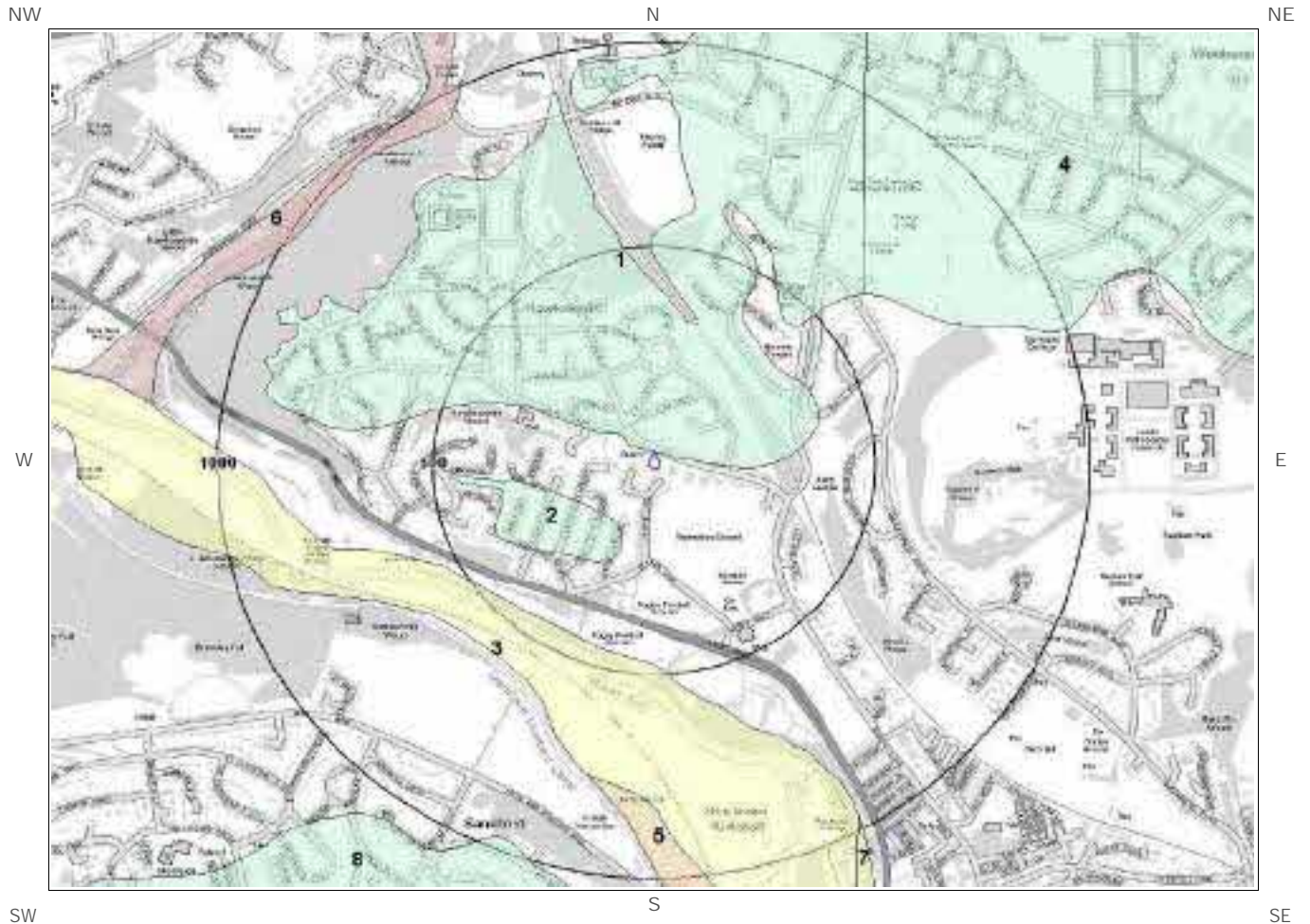
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	233.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	333.0	W	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	346.0	SW	DDGR-ARTGR	DISTURBED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND
4	379.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

#### 2.1.2 Permeability of Artificial Ground

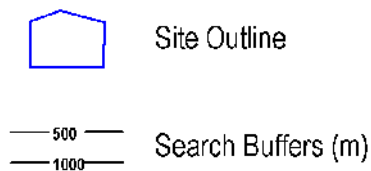
Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

# 2.2 Superficial Deposits and Landslips map (1:50,000 scale)



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## 2.2 Superficial Deposits and Landslips

### 2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	HRT-CSV	HARROGATE TILL FORMATION	CLAY, SANDY, GRAVELLY
2	153.0	SW	HRT-CSV	HARROGATE TILL FORMATION	CLAY, SANDY, GRAVELLY
3	445.0	SW	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

### 2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Moderate	Low

### 2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

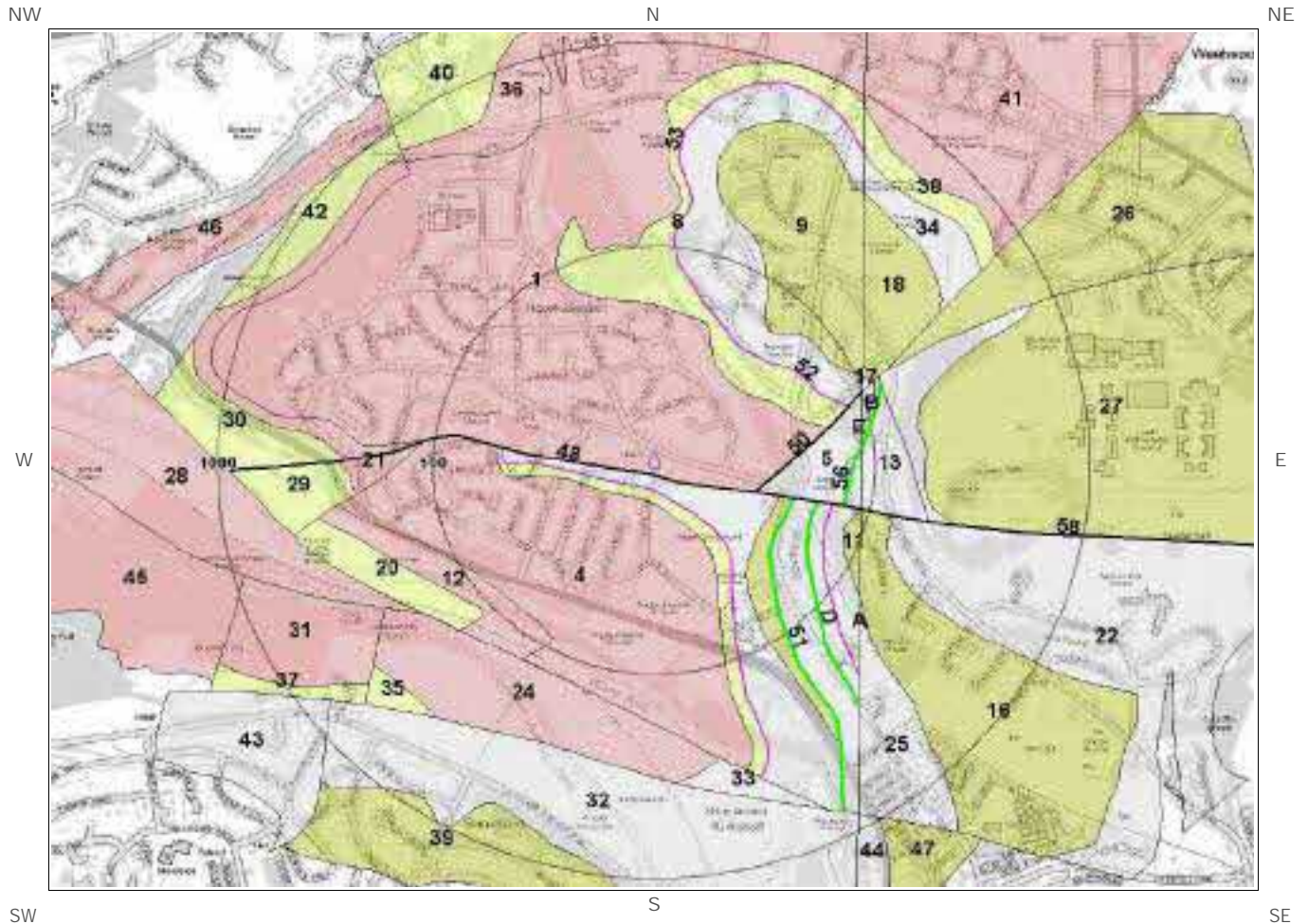
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

### 2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

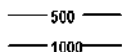
## 2.3 Bedrock and linear features map (1:50,000 scale)



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Site Outline



Search Buffers (m)



## 2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 069

### 2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
2A	14.0	S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
3C	47.0	S	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
4	79.0	S	RR-SDST	ROUGH ROCK - SANDSTONE	NAMURIAN
5	232.0	E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
6	244.0	NE	MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR] - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
7A	280.0	SE	SBF-SDST	SOFT BED FLAGS - SANDSTONE	WESTPHALIAN
8	323.0	NE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	396.0	NE	SBF-SDST	SOFT BED FLAGS - SANDSTONE	WESTPHALIAN
10E	452.0	E	SBF-SDST	SOFT BED FLAGS - SANDSTONE	WESTPHALIAN
11	456.0	E	STNR-SDST	STANNINGLEY ROCK - SANDSTONE	WESTPHALIAN
12	457.0	SW	RF-SDST	ROUGH ROCK FLAGS - SANDSTONE	NAMURIAN
13	469.0	E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14B	473.0	E	SBF-SDST	SOFT BED FLAGS - SANDSTONE	WESTPHALIAN
15B	480.0	E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
16	480.0	E	STNR-SDST	STANNINGLEY ROCK - SANDSTONE	WESTPHALIAN

### 2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	High	Moderate
14.0	S	Fracture	High	Low
47.0	S	Fracture	Moderate	Low

### 2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? Yes

ID	Distance	Direction	Category Description	Feature Description
48	14.0	S	FAULT	Fault, inferred
49C	47.0	S	FOSSIL_HORIZON	Marine band
50	232.0	E	FAULT	Fault, inferred
51	315.0	SE	ROCK	Coal seam, inferred
52	323.0	NE	FOSSIL_HORIZON	Marine band
53	323.0	NE	FOSSIL_HORIZON	Marine band
54D	373.0	E	ROCK	Coal seam, inferred
55D	413.0	E	FOSSIL_HORIZON	Marine band
56	439.0	E	ROCK	Coal seam, inferred
57E	472.0	E	ROCK	Coal seam, inferred
58	480.0	E	FAULT	Fault, inferred

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

# 3 Radon Data

## 3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?      The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

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## 3.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?      No radon protective measures are necessary.


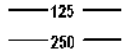



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# 4 Ground Workings map



Ground Workings Legend

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-  Site Outline
-  Search Buffers (m)
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings

# 4 Ground Workings

## 4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary?  Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	425695 436728	Unspecified Quarry	1892
2B	0.0	On Site	425682 436732	Unspecified Quarry	1938
3A	0.0	On Site	425715 436725	Unspecified Quarry	1956
4A	0.0	On Site	425715 436725	Unspecified Quarry	1968
5B	7.0	W	425691 436750	Unspecified Quarry	1906
6C	72.0	W	425658 436763	Unspecified Quarry	1992
7C	73.0	W	425654 436750	Unspecified Quarry	1968
8C	73.0	W	425654 436750	Unspecified Quarry	1956
9C	73.0	W	425654 436750	Unspecified Quarry	1982

## 4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary?  No

Database searched and no data found.

### 4.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

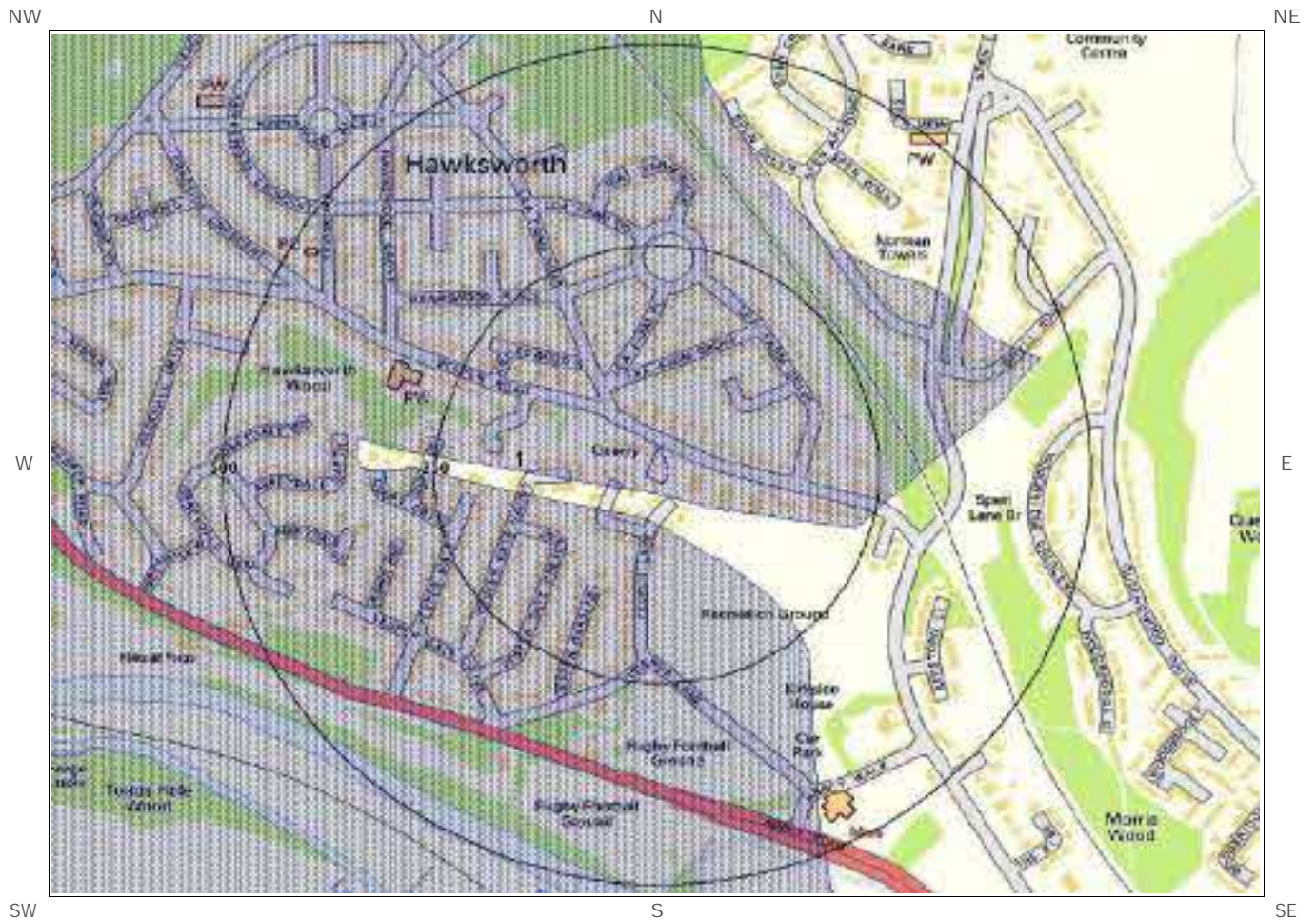
The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
10	41.0	W	425710 436745	Sandstone	Quarry Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
11C	92.0	W	425665 436770	Sandstone	Quarry Bank	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	415.0	SW	425594 436306	Sandstone	Forge Wood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	528.0	W	425210 436645	Sandstone	Kirkstall Forge Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	534.0	W	425225 436543	Sandstone	Kirkstall Forge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	544.0	W	425191 436699	Sandstone	Kirkstall Forge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	610.0	N	425615 437330	Fireclay	Horsforth Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	610.0	N	425615 437330	Sandstone	Horsforth Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	650.0	W	425128 436930	Sandstone	Hawksworth Wood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	710.0	SW	425203 436229	Sandstone	Little Fall Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	724.0	N	425675 437455	Sandstone	Hawksworth	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	725.0	N	425755 437460	Clay & Shale	Hawksworth Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	725.0	N	425755 437460	Sandstone	Hawksworth Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	725.0	N	425755 437460	Sandstone	Hawksworth Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	772.0	NW	425147 437217	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	790.0	NW	425193 437296	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	804.0	N	425604 437526	Sandstone	Hawksworth	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	816.0	NW	425361 437453	Sandstone	Butcher Hill	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	843.0	NW	425071 437235	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	850.0	NW	425186 437371	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	852.0	NW	425155 437345	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	862.0	NW	425093 437293	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	865.0	NW	424961 437089	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	867.0	NW	425000 437170	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	944.0	W	424820 436930	Sandstone	Cowbeckbridge	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	956.0	W	424849 437056	Sandstone	White Hall Quarries	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	958.0	N	425475 437653	Sandstone	Apex Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	989.0	N	425400 437660	Sandstone	Apex Quarry	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

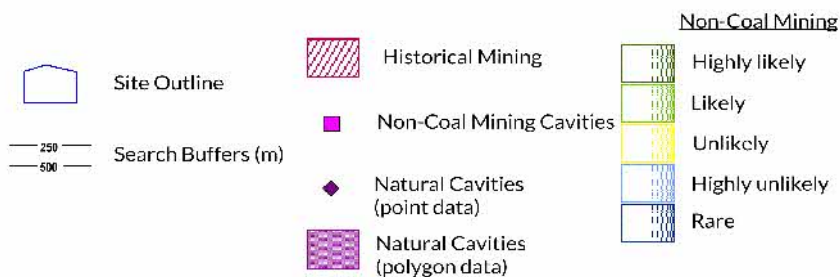


# 5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

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# 5 Mining, Extraction & Natural Cavities

## 5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

---

## 5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

---

## 5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	735.0	W	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
Not shown	884.0	SE	Elland Flag Mines	Sandstone - Elland Flags	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered

## 5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

## 5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

## 5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 5.9 Cornwall and Devon Metalliferous Mining

This dataset provides information on metalliferous mining areas in Cornwall/Devon and is derived from records held by Mining Searches UK.

Are there any Cornwall and Devon Metalliferous Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

---

## 5.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

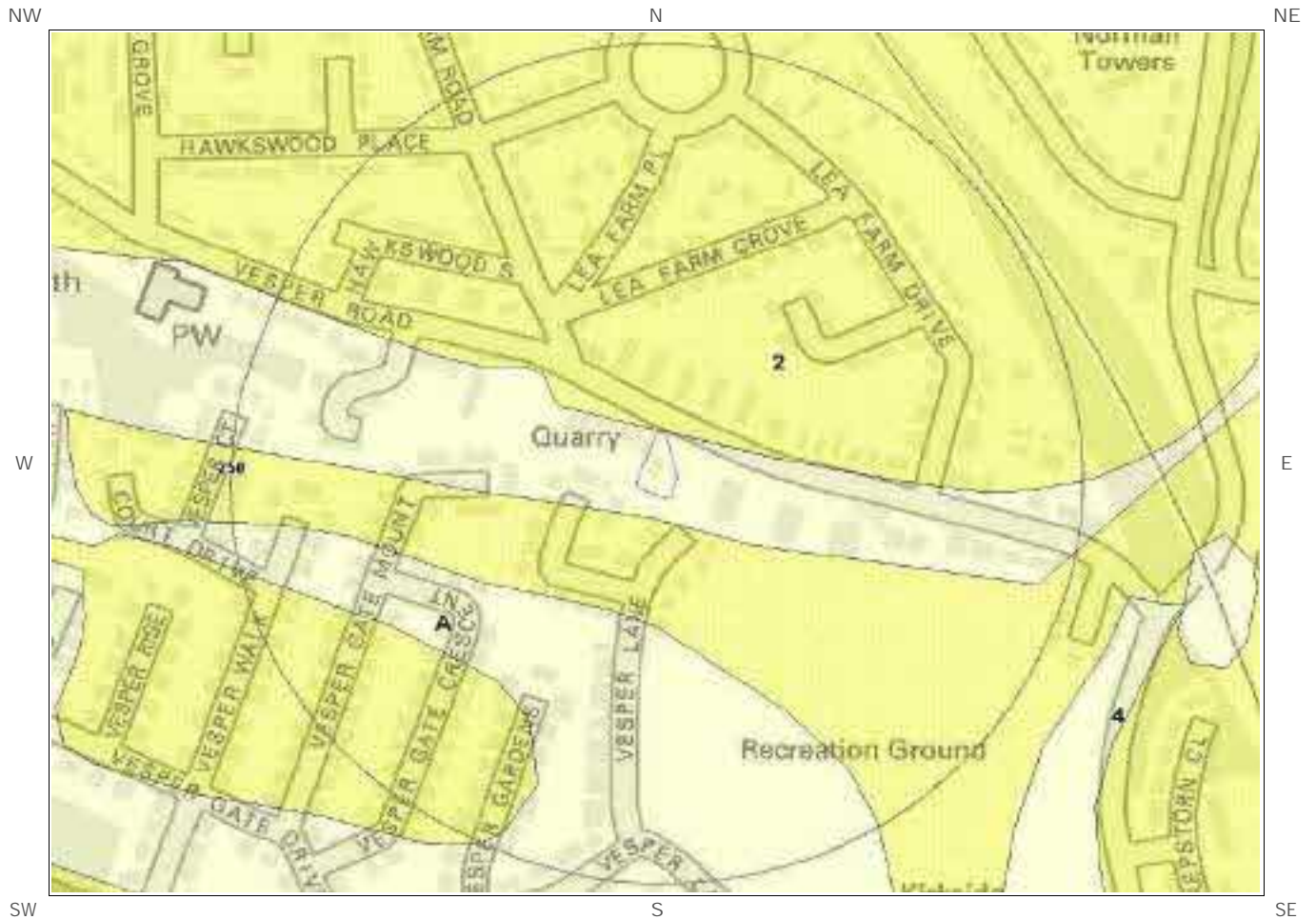
Database searched and no data found.

---



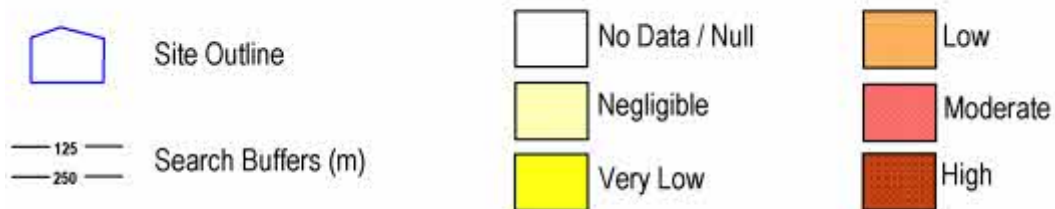
# 6 Natural Ground Subsidence

## 6.1 Shrink-Swell Clay map

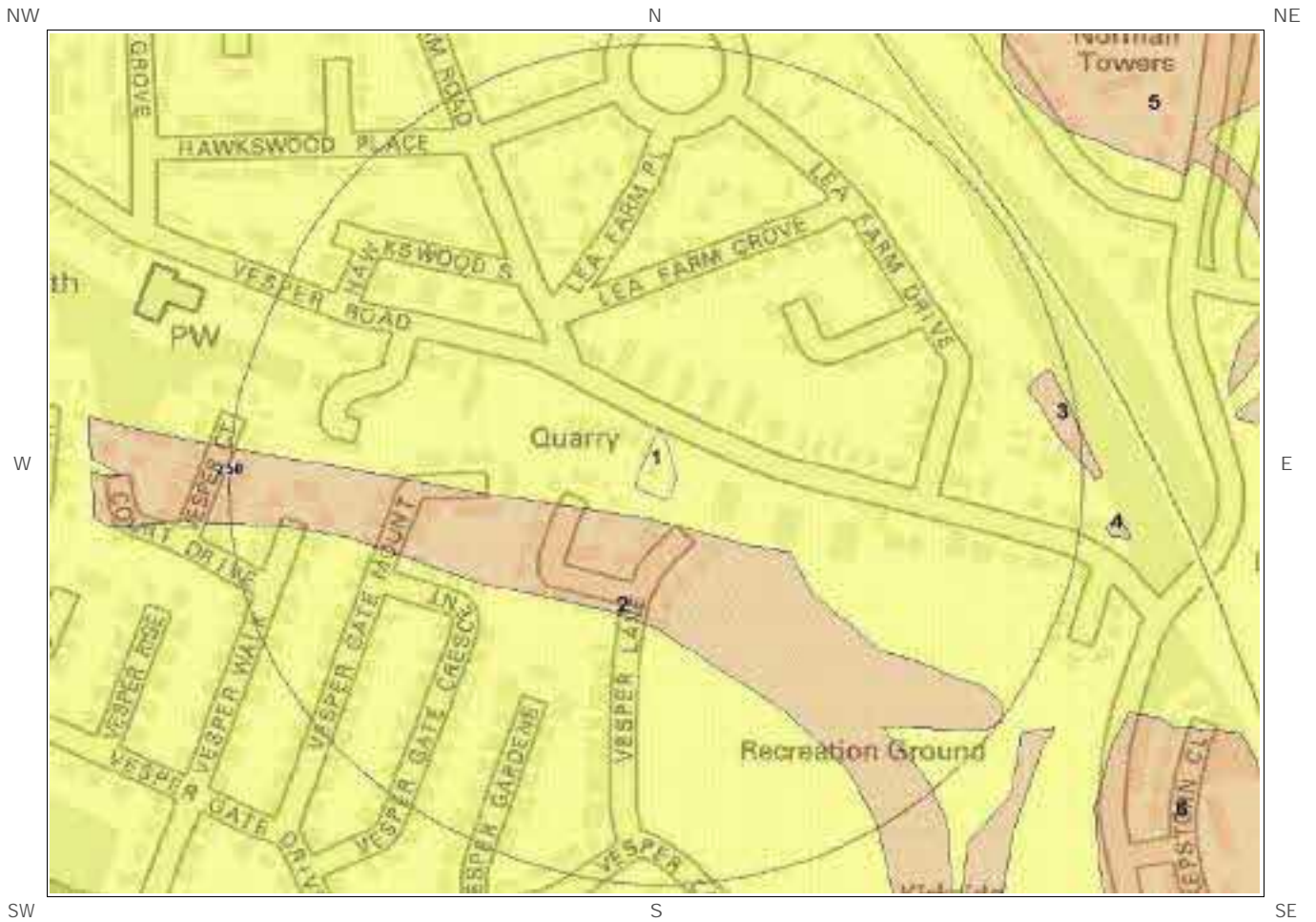


Shrink Swell Clay Legend

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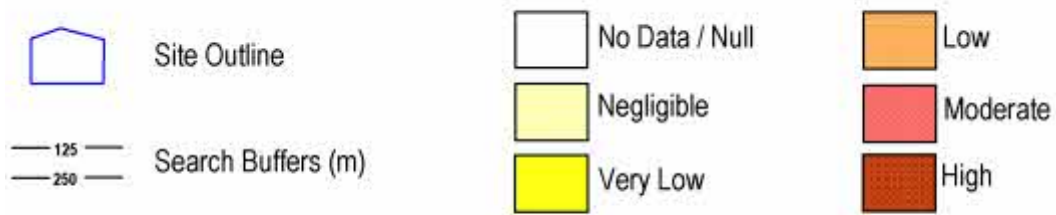


# 6.2 Landslides map

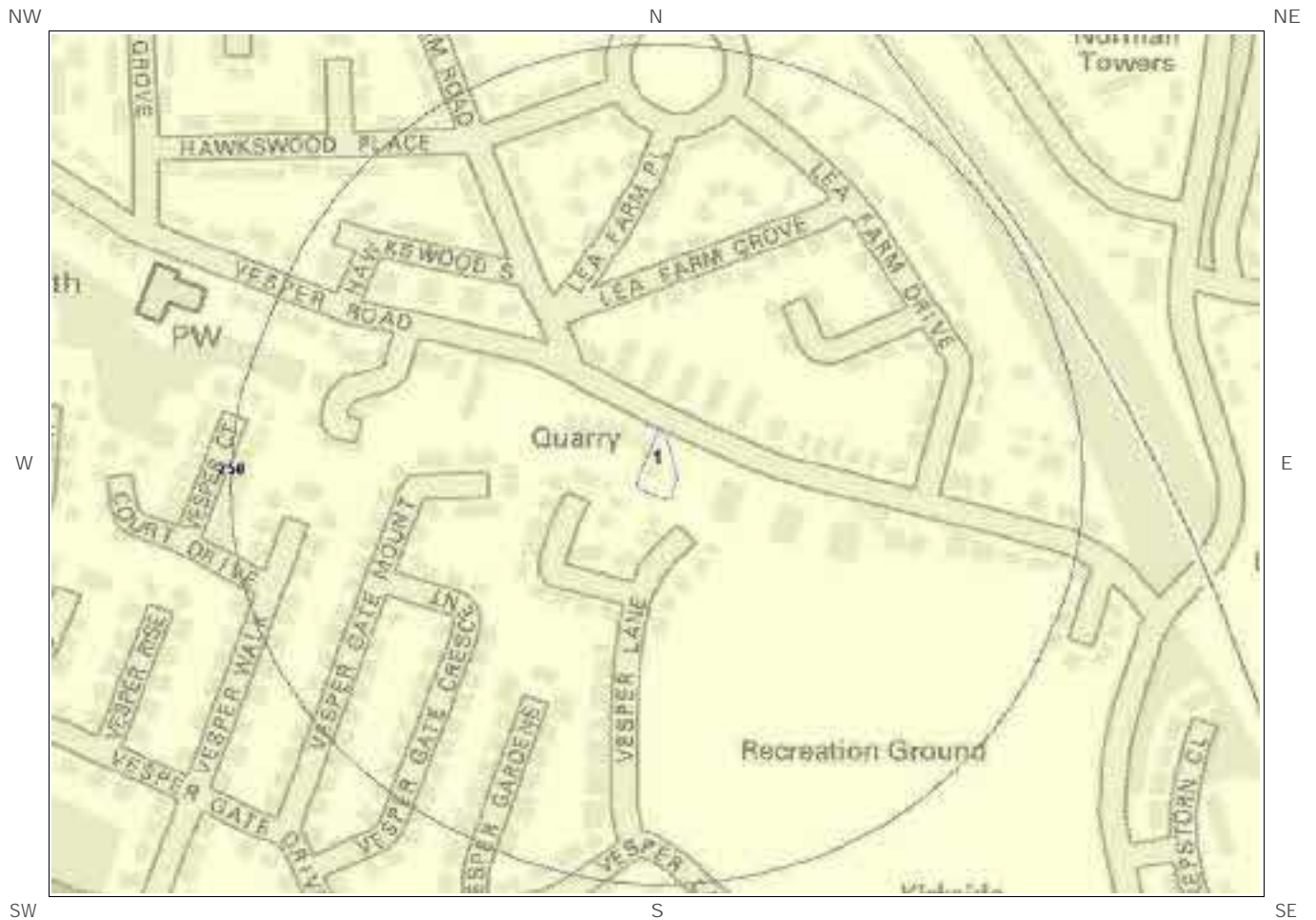


Landslides Legend

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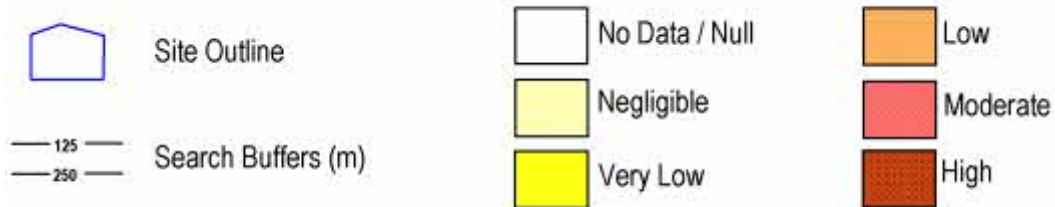


# 6.3 Ground Dissolution of Soluble Rocks map



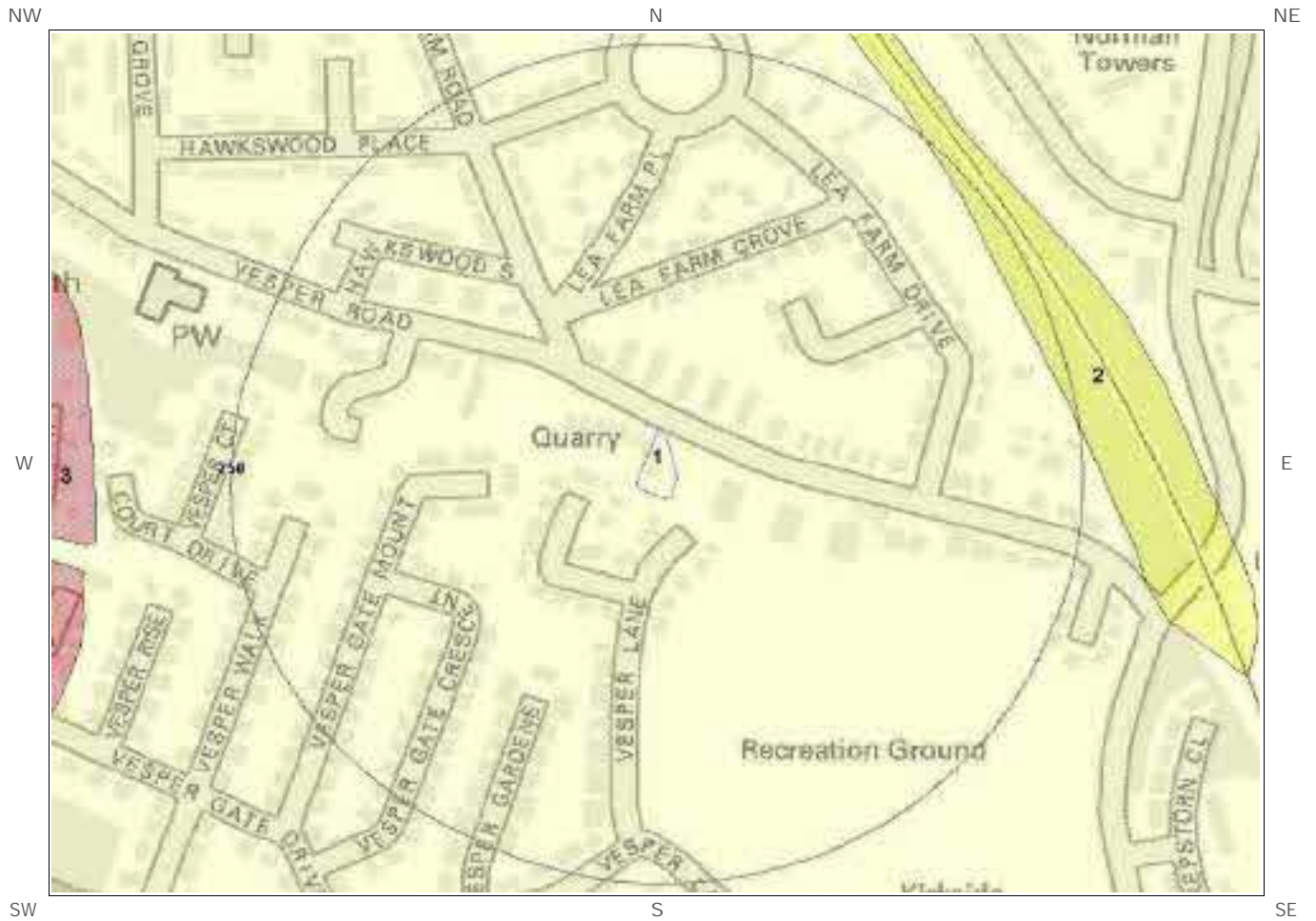
Ground Dissolution  
Soluble Rocks Legend

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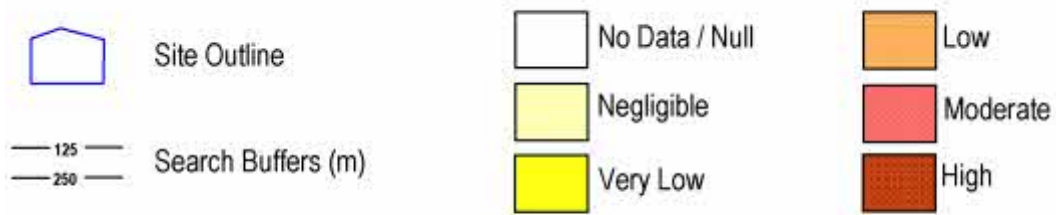


# 6.4 Compressible Deposits map

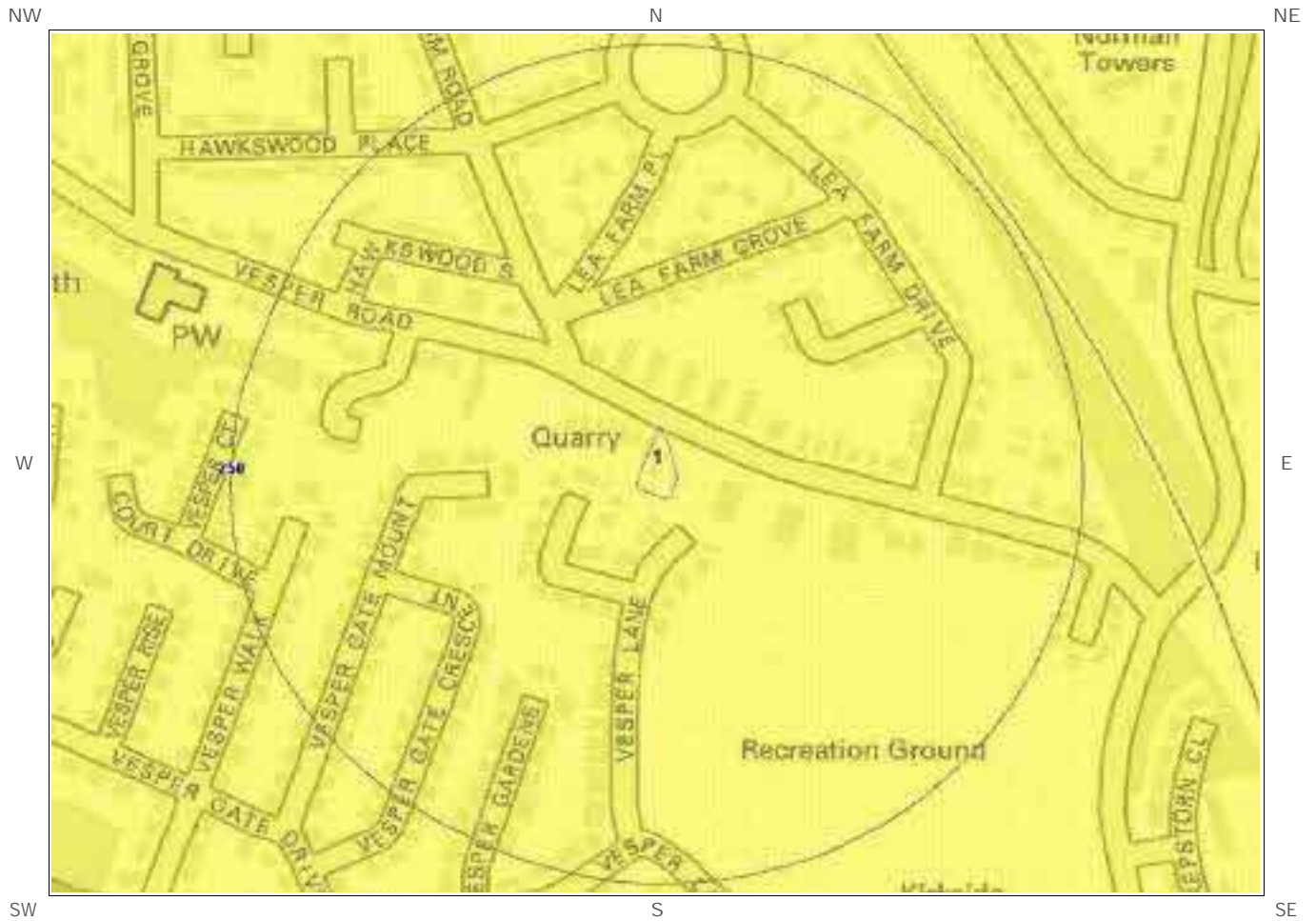


Compressible Deposits Legend

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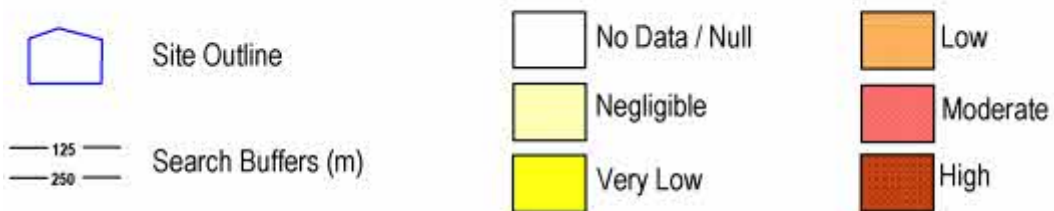


# 6.5 Collapsible Deposits map

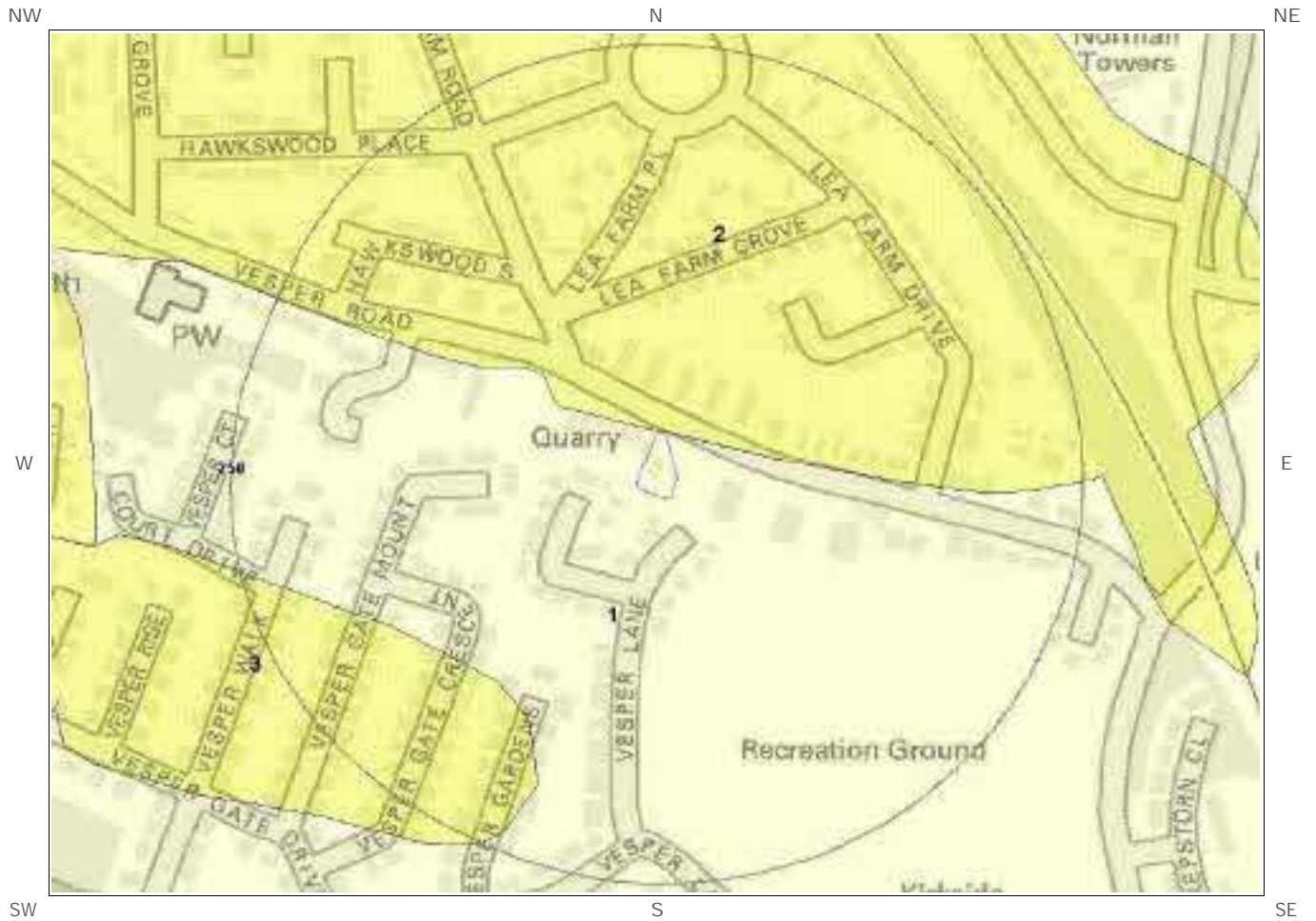


Collapsible Deposits Legend

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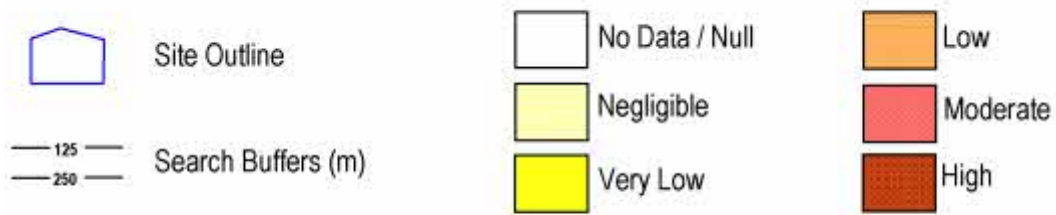


# 6.6 Running Sand map



Running Sand Legend

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# 6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site\* boundary? Low

## 6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1A	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
2	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

## 6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	14.0	S	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

\* This includes an automatically generated 50m buffer zone around the site



### 6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

### 6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

### 6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

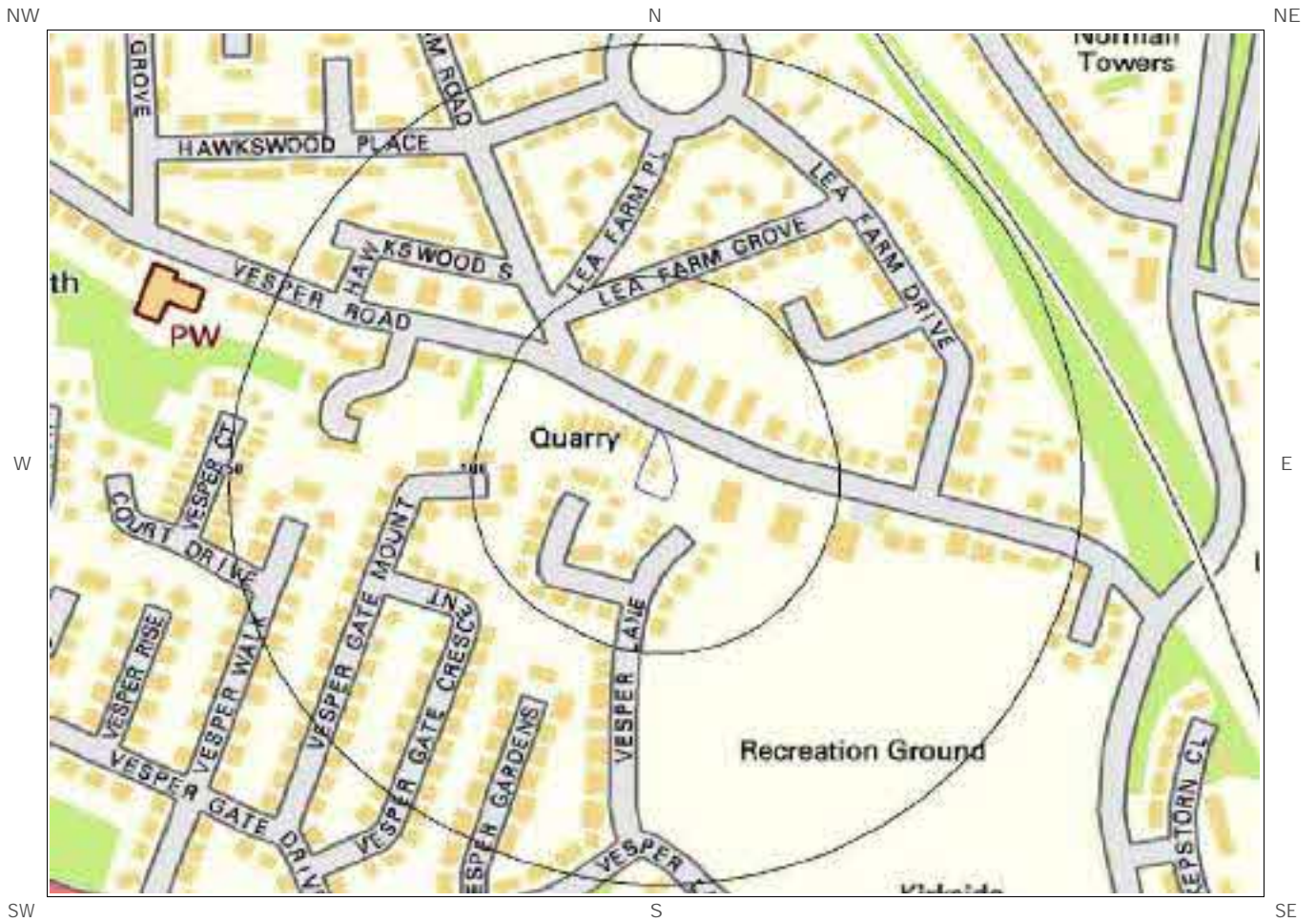
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

### 6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

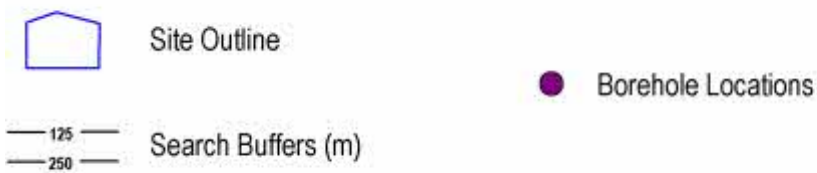
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

# 7 Borehole Records map



Borehole Records Legend

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## 7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 0

Database searched and no data found.

---

# 8 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

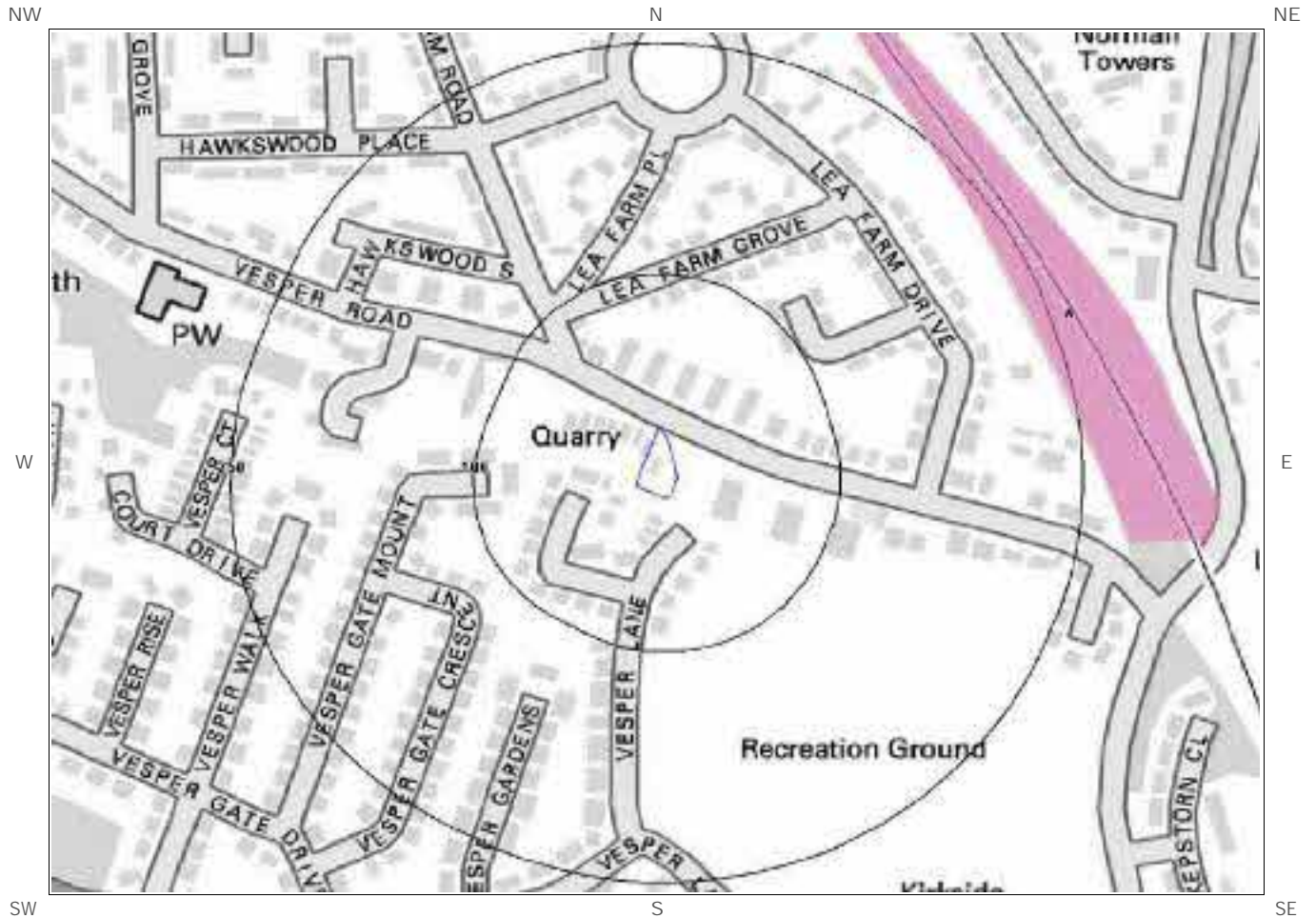
4

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
14.0	S	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
47.0	S	RuralSoil	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg

\*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

# 9 Railways and Tunnels map



Railways and Tunnels Legend

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# 9 Railways and Tunnels

## 9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

*Any records that have been identified are represented on the Railways and Tunnels map.*

---

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

*Any records that have been identified are represented on the Railways and Tunnels map.*

---

## 9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	237	NE	n/a	Railways	1921
2A	237	NE	n/a	Railway	1934

*Any records that have been identified are represented on the Railways and Tunnels map.*

---

### 9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above  
*Any records that have been identified are represented on the Railways and Tunnels map.*

---

### 9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above  
*Any records that have been identified are represented on the Railways and Tunnels map.*

---

### 9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

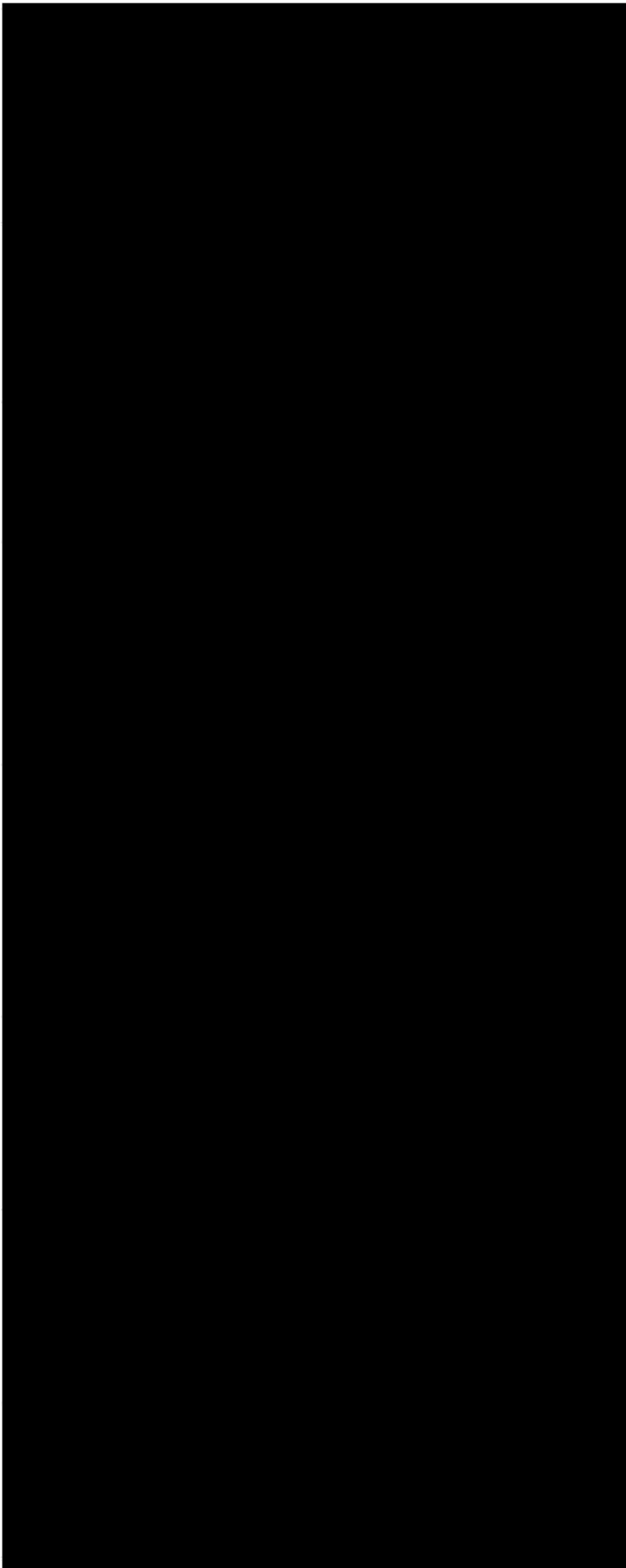
*Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.*

---

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

# Contact Details







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# Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:  
<https://www.groundsure.com/terms-and-conditions-jan-2020/>



JNP Group

J N P, UNIT 1, MEADOWHALL ROAD,  
SHEFFIELD, S9 1BW

Groundsure Reference: GS-6567185

Your Reference: B23391

Report Date 21 Jan 2020

Report Delivery Method: Email - pdf

## Enviro Insight

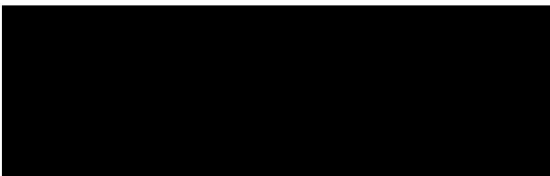
Address: 33A, VESPER ROAD, KIRKSTALL, LEEDS, LS5 3NU

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Enviro Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,



Managing Director  
Groundsure Limited

Enc.  
Groundsure Enviroinsight

# Enviro Insight

Address: 33A, VESPER ROAD, KIRKSTALL, LEEDS, LS5 3NU  
Date: 21 Jan 2020  
Reference: GS-6567185  
Client: JNP Group



Aerial Photograph Capture date: 17-Jul-2017  
Grid Reference: 425753,436727  
Site Size: 0.0667ha

Report Reference: GS-6567185  
Client Reference: B23391

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# Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	4	1	5	55
1.2 Additional Information –Historical Tank Database	0	0	0	0
1.3 Additional Information –Historical Energy Features Database	0	4	4	20
1.4 Additional Information –Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information –Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Historical military sites	0	0	0	0
1.7 Potentially Infilled Land	4	1	4	39
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	8
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	2	0
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
<b>3.1 Landfill Sites</b>						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	1	2	4	6
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	1	2	2
<b>3.2 Landfill and Other Waste Sites Findings</b>						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	1	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	1	3	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	On-site	0-50m	51-250	251-500	501-1000	1000-2000
<b>0-500m</b>						
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site						Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site						Identified
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	6
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	2	12
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	Yes
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	8	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding	
7.1 Environment Agency Zone 2 floodplains within 250m of the study site	None identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Potential at Surface
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	Low

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	1	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	0	1	1
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	1	0	0	1

## Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Very Low
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Very Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Low
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Negligible
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

## Section 10: Mining

10.1 Coal mining areas within 75m of the study site	Identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

# Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

## 1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

## 2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

## 3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

## 4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

## 5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

## 6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

## 7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flow areas. This search is conducted using radii of up to 250m.

## 8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

## 9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

## 10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

## 11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

### Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.





# 1. Historical Industrial Sites

## 1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 65

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Unspecified Quarry	1968
2A	0	On Site	Unspecified Quarry	1956
3B	0	On Site	Unspecified Quarry	1892
4B	0	On Site	Unspecified Quarry	1938
5B	7	W	Unspecified Quarry	1906
6C	72	W	Unspecified Quarry	1992
7C	73	W	Unspecified Quarry	1982
8C	73	W	Unspecified Quarry	1968
9C	73	W	Unspecified Quarry	1956
10	197	E	Nursery	1906
11D	262	W	Unspecified Heap	1968
12D	262	W	Unspecified Pit	1982
13E	266	S	Mill Pond	1906
14E	267	S	Unspecified Pit	1956
15AA	309	N	Cuttings	1892
16F	323	N	Cuttings	1906
17F	323	N	Cuttings	1938
18H	335	N	Cuttings	1847
19G	349	W	Unspecified Quarry	1968
20K	369	N	Cuttings	1956
21N	374	SW	Forge	1938
22AB	375	N	Brick Works	1892
23G	378	W	Unspecified Quarry	1956
24H	384	N	Cuttings	1968
25H	384	N	Cuttings	1982
26H	384	N	Cuttings	1992
27AC	389	E	Unspecified Ground Workings	1938
28AD	392	SW	Refuse Heaps	1938
29AE	392	SW	Unspecified Heap	1906
30AF	393	SW	Unspecified Ground Workings	1906
31I	395	N	Unspecified Quarry	1938
32I	398	N	Unspecified Quarry	1906
33J	400	N	Unspecified Ground	1968

			Workings	
34J	400	N	Unspecified Ground Workings	1982
35J	400	N	Unspecified Ground Workings	1956
36J	400	N	Unspecified Ground Workings	1992
37K	404	N	Railway Sidings	1892
38J	405	N	Unspecified Ground Workings	1892
39	409	S	Old Sandstone Quarry	1847
40O	417	SW	Unspecified Commercial/Industrial	1956
41AG	419	SW	Forge Quarry	1938
42	428	S	Unspecified Mill	1892
43L	434	N	Unspecified Heaps	1956
44L	440	N	Unspecified Heap	1992
45L	440	N	Unspecified Heap	1982
46L	440	N	Unspecified Heap	1968
47Q	451	SE	Cuttings	1847
48AH	453	SW	Unspecified Quarry	1906
49AI	453	N	Unspecified Pit	1892
50M	459	SW	Unspecified Ground Workings	1956
51	459	N	Railway Sidings	1938
52M	461	SW	Unspecified Ground Workings	1992
53M	461	SW	Unspecified Ground Workings	1968
54M	461	SW	Unspecified Ground Workings	1982
55AJ	462	SW	Unspecified Ground Workings	1892
56	464	N	Railway Sidings	1906
57	467	SW	Railway Sidings	1906
58N	467	SW	Forge	1906
59	467	SW	Railway Sidings	1938
60O	467	SW	Unspecified Works	1968
61AK	479	N	Brick Works	1906
62P	480	SW	Railway Sidings	1968
63P	480	SW	Railway Sidings	1956
64Q	485	SE	Cuttings	1938
65	488	W	Railway Sidings	1938

## 1.2 Additional Information –Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary:

0

Database searched and no data found.

---

### 1.3 Additional Information –Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary:

28

ID	Distance (m)	Direction	Use	Date
66R	10	E	Gas Governor	1993
67R	11	E	Gas Governor	1972
68R	15	E	Electricity Substation	1953
69R	15	E	Electricity Substation	1954
70S	53	E	Electricity Substation	1972
71S	54	E	Electricity Substation	1993
72T	98	SW	Electricity Substation	1993
73T	99	SW	Electricity Substation	1972
74U	296	E	Gas Governor	1953
75U	297	E	Gas Governor	1953
76V	306	S	Electricity Substation	1996
77V	306	S	Electricity Substation	1993
78V	308	S	Electricity Substation	1973
79W	316	SW	Electricity Substation	1993
80W	316	SW	Electricity Substation	1972
81W	316	SW	Electricity Substation	1987
82W	316	SW	Electricity Substation	1984
83W	316	SW	Electricity Substation	1982
84X	343	SW	Electricity Substation	1953
85X	343	SW	Electricity Substation	1967
86X	343	SW	Electricity Substation	1954
87	365	N	Electricity Substation	1993
88Y	428	SE	Electricity Substation	1987
89Y	428	SE	Electricity Substation	1969
90Z	461	W	Electricity Substation	1987
91Z	461	W	Electricity Substation	1993
92Z	462	W	Electricity Substation	1984
93Z	462	W	Electricity Substation	1982

---

## 1.4 Additional Information –Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

---

## 1.5 Additional Information –Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

## 1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 0

Database searched and no data found.

## 1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 48

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
94B	0	On Site	Unspecified Quarry	1892
95A	0	On Site	Unspecified Quarry	1956
96A	0	On Site	Unspecified Quarry	1968
97B	0	On Site	Unspecified Quarry	1938
98B	7	W	Unspecified Quarry	1906
99C	72	W	Unspecified Quarry	1992
100C	73	W	Unspecified Quarry	1956
101C	73	W	Unspecified Quarry	1968
102C	73	W	Unspecified Quarry	1982

103D	262	W	Unspecified Heap	1968
104D	262	W	Unspecified Pit	1982
105E	266	S	Mill Pond	1906
106E	267	S	Unspecified Pit	1956
107AA	309	N	Cuttings	1892
108F	323	N	Cuttings	1906
109F	323	N	Cuttings	1938
110G	349	W	Unspecified Quarry	1968
111K	369	N	Cuttings	1956
112AB	375	N	Brick Works	1892
113G	378	W	Unspecified Quarry	1956
114H	384	N	Cuttings	1992
115H	384	N	Cuttings	1968
116H	384	N	Cuttings	1982
117AC	389	E	Unspecified Ground Workings	1938
118AD	392	SW	Refuse Heaps	1938
119AE	392	SW	Unspecified Heap	1906
120AF	393	SW	Unspecified Ground Workings	1906
121I	395	N	Unspecified Quarry	1938
122I	398	N	Unspecified Quarry	1906
123J	400	N	Unspecified Ground Workings	1956
124J	400	N	Unspecified Ground Workings	1968
125J	400	N	Unspecified Ground Workings	1992
126J	400	N	Unspecified Ground Workings	1982
127J	405	N	Unspecified Ground Workings	1892
128AG	419	SW	Forge Quarry	1938
129L	434	N	Unspecified Heaps	1956
130L	440	N	Unspecified Heap	1968
131L	440	N	Unspecified Heap	1982
132L	440	N	Unspecified Heap	1992
133AH	453	SW	Unspecified Quarry	1906
134AI	453	N	Unspecified Pit	1892
135M	459	SW	Unspecified Ground Workings	1956
136M	461	SW	Unspecified Ground Workings	1992
137M	461	SW	Unspecified Ground Workings	1968
138M	461	SW	Unspecified Ground Workings	1982
139AJ	462	SW	Unspecified Ground Workings	1892
140AK	479	N	Brick Works	1906



---

141Q

485

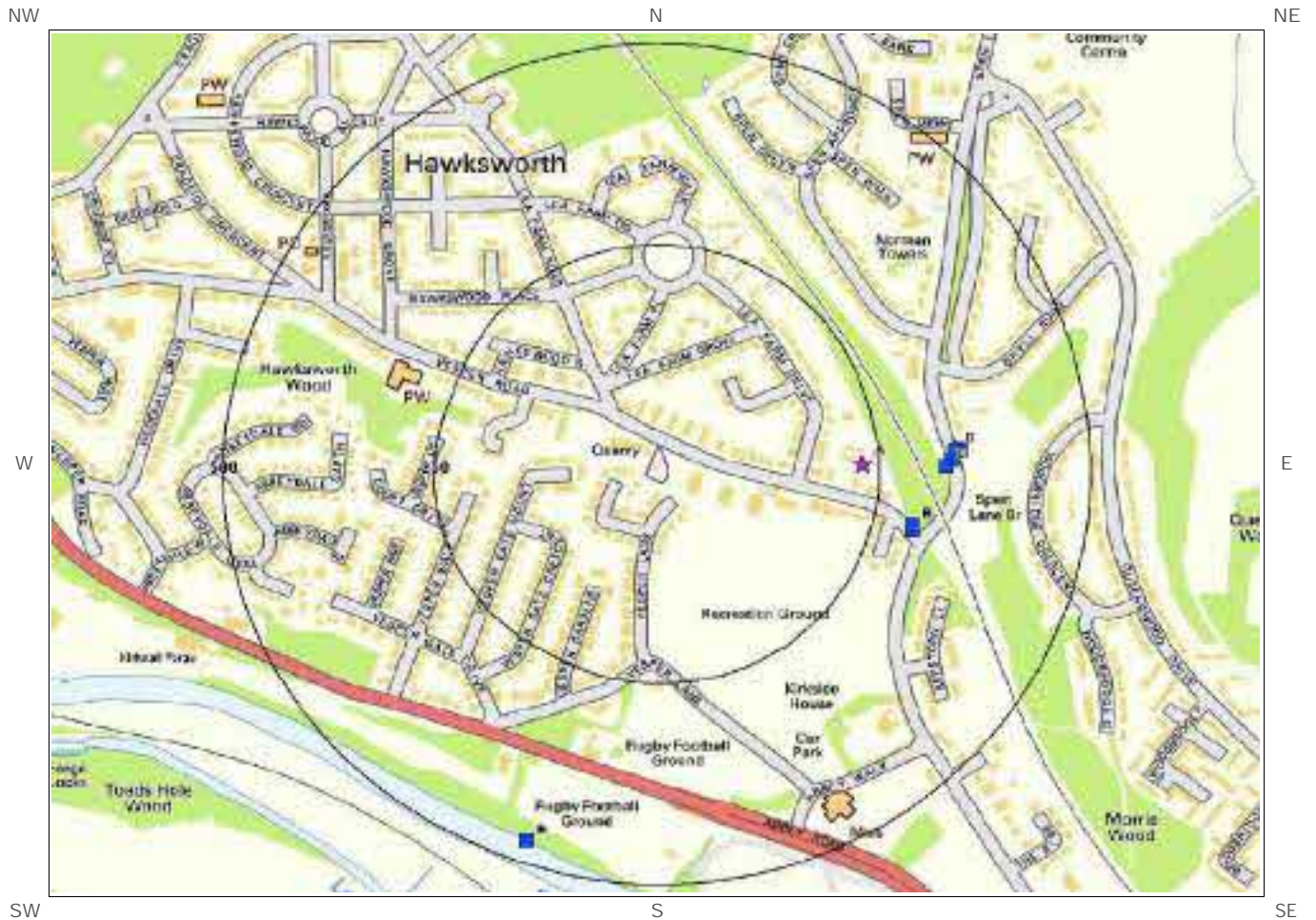
SE

Cuttings

1938

---

# 2. Environmental Permits, Incidents and Registers Map



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- |   |                               |   |  |   |   |
|---|-------------------------------|---|--|---|---|
|  | Site Outline                  |  | Recorded Pollution Incident                                    |  | RAS 3 & 4 Authorisations                  |
|  | Dangerous Substances (List 1) |  | Part A(1) Authorised Processes and Historic IPC Authorisations |  | Part A(2) and Part B Authorised Processes |
|  | Dangerous Substances (List 2) |  | Water Industry Referrals                                       |  | COMAH / NIHHS Sites                       |
|  | Search Buffers (m)            |  | Licensed Discharge Consents                                    |  | Sites Determined as Contaminated Land     |
|  | Red List Discharge Consents   |  | Hazardous Substance Consents and Enforcements                  |   |   |

## 2. Environmental Permits, Incidents and Registers

### 2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

#### 2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

---

#### 2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

---

#### 2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

#### 2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

---

#### 2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

---

### 2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

### 2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

### 2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

8

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
3B	295	E	426050 436637	<p>Address: VESPER ROAD CSO, VESPER ROAD/SOUTHOLME ROAD JCT, HAWKSWORTH, LEEDS, WEST YORKSHIRE, LS5 3LP</p> <p>Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Permit Number: WRA8533 Permit Version: 2</p> <p>Receiving Water: CULVERTED TRIB OF RIVER AIRE Status: VARIED UNDER EPR 2010 Issue date: 24/03/2017 Effective Date: 24-Mar-2017 Revocation Date: -</p>
4B	297	E	426050 436630	<p>Address: VESPER ROAD CSO, VESPER ROAD/SOUTHOLME ROAD JCT, HAWKSWORTH, LEEDS, WEST YORKSHIRE, LS5 3LP</p> <p>Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Permit Number: WRA8533 Permit Version: 1</p> <p>Receiving Water: TRIBUTARY OF THE RIVER AIRE Status: NEW CONSENT (WRA 91, S88 &amp; SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2005 Effective Date: 18-Mar-2005 Revocation Date: 23/03/2017</p>
5C	328	E	426090 436710	<p>Address: SPEN LANE 184 CSO, SPEN LANE (OPPOSITE NO 82), , LEEDS, WEST YORKSHIRE, LS16 5EN</p> <p>Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Permit Number: WRA8534 Permit Version: 1</p> <p>Receiving Water: TRIBUTARY OF THE RIVER AIRE Status: NEW CONSENT (WRA 91, S88 &amp; SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2005 Effective Date: 31-Mar-2005 Revocation Date: 23/03/2017</p>
6C	335	E	426097 436717	<p>Address: SPEN LANE 184 CSO, SPEN LANE (OPPOSITE NO 82), , LEEDS, WEST YORKSHIRE, LS16 5EN</p> <p>Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY</p> <p>Permit Number: WRA8534 Permit Version: 2</p> <p>Receiving Water: CULVERTED TRIB OF RIVER AIRE Status: VARIED UNDER EPR 2010 Issue date: 24/03/2017 Effective Date: 24-Mar-2017 Revocation Date: -</p>
7D	339	E	426100 436730	<p>Address: SPEN LANE 185 CSO, SPEN LANE (OFF), ADJ NO 74, LEEDS, WEST YORKSHIRE, LS6 3LN</p> <p>Receiving Water: TRIBUTARY OF THE RIVER AIRE Status: NEW CONSENT (WRA 91, S88 &amp;</p>

ID	Distance (m)	Direction	NGR	Details	
				Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9145 Permit Version: 1	SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 14/08/2007 Effective Date: 14-Aug-2007 Revocation Date: 23/03/2017
8D	346	E	426107 436731	Address: SPEN LANE 185 CSO, SPEN LANE (OFF), ADJ NO 74, LEEDS, WEST YORKSHIRE, LS6 3LN Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9145 Permit Version: 2	Receiving Water: CULVERTED TRIB OF RIVER AIRE Status: VARIED UNDER EPR 2010 Issue date: 24/03/2017 Effective Date: 24-Mar-2017 Revocation Date: -
9E	473	S	425595 436244	Address: VESPER LANE CSO, VESPER LANE, KIRKSTALL, LEEDS, WEST YORKSHIRE, LS5 3NG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9183 Permit Version: 1	Receiving Water: RIVER AIRE Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 23/08/2007 Effective Date: 23-Aug-2007 Revocation Date: 27/03/2017
10E	473	S	425595 436244	Address: VESPER LANE CSO, VESPER LANE, KIRKSTALL, LEEDS, WEST YORKSHIRE, LS5 3NG Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9183 Permit Version: 2	Receiving Water: RIVER AIRE Status: VARIED UNDER EPR 2010 Issue date: 28/03/2017 Effective Date: 28-Mar-2017 Revocation Date: -

**2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:**

0

Database searched and no data found.

**2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:**

0

Database searched and no data found.

**2.2 Dangerous or Hazardous Sites**

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

## 2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

### 2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

2

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1A	229	E	425991.0 436712.0	Incident Date: 03-Sep-2001 Incident Identification: 28732.0 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
2A	229	E	425991.0 436712.0	Incident Date: 03-Sep-2001 Incident Identification: 28732.0 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

### 2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

## 2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site

0

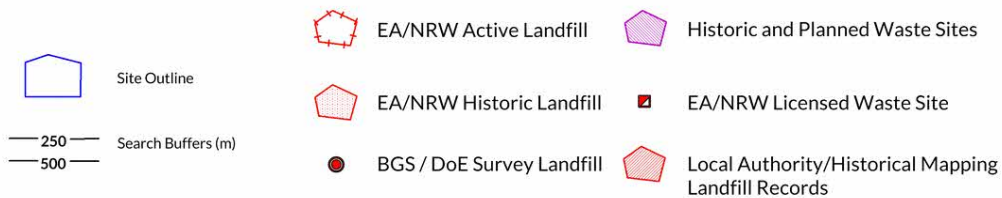
Database searched and no data found.



# 3. Landfill and Other Waste Sites Map



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# 3. Landfill and Other Waste Sites

## 3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

13

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
1	59	NW		<p>Site Address: Vesper Road, Hawksworth, Leeds</p> <p>Waste Licence: - Site Reference: - Waste Type: Household Environmental Permitting Regulations (Waste) Reference: -</p> <p>Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: - First Recorded: - Last Recorded: -</p>
2	287	W		<p>Site Address: Forge Quarry, Abbey Road, Leeds</p> <p>Waste Licence: Yes Site Reference: 4700/0034 Waste Type: Inert, Industrial, Commercial Environmental Permitting Regulations (Waste) Reference: -</p> <p>Licence Issue: 03-Aug-1977 Licence Surrendered: 25-Feb-1980 Licence Holder Address: Kingsmill, London Road, Loudwater, High Wycombe, Buckinghamshire Operator: Biffa Limited Licence Holder: Biffa Limited First Recorded: 30-Apr-1970 Last Recorded: 24-Nov-1978</p>
3	454	W		<p>Site Address: Briggs Quarry, Abbey Road, Leeds, West Yorkshire</p> <p>Waste Licence: - Site Reference: - Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -</p> <p>Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: Barmill Limited Licence Holder: - First Recorded: 31-Mar-1970 Last Recorded: -</p>
4	619	SW		<p>Site Address: Land adjacent to Leeds and Bradford Road, Kirkstall/Sandford</p> <p>Waste Licence: Yes Site Reference: 4700/0324 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -</p> <p>Licence Issue: 16-Sep-1982 Licence Surrendered: Licence Holder Address: Selectapost 10, Civic Hall, Leeds Operator: - Licence Holder: Director of Leisure Services, Leeds City Council First Recorded: -</p>

ID	Distance (m)	Direction	NGR	Details
				Last Recorded: -
5	747	NW		<p>Site Address: Cragside Walk, Hawksworth, Leeds  Waste Licence: -  Site Reference: -  Waste Type: Commercial, Household, Liquid sludge  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue:  Licence Surrendered:  Licence Holder Address: -  Operator: Leeds Corporation  Licence Holder: -  First Recorded: -  Last Recorded: -</p>
Not shown	856	N		<p>Site Address: Apex Quarry, Butcher Hill, Leeds, Horsforth, West Yorkshire  Waste Licence: Yes  Site Reference: -  Waste Type: -  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue: 23-Nov-2000  Licence Surrendered: 20-May-2014  Licence Holder Address: Albert Road, Leeds, Morley, West Yorkshire  Operator: Mone Bros Civil Engineering Ltd  Licence Holder: Mone Bros Civil Engineering Ltd  First Recorded: -  Last Recorded: -</p>
Not shown	857	E		<p>Site Address: Carnegie College, Beckett Park, Leeds  Waste Licence: Yes  Site Reference: 4700/0311  Waste Type: Inert, Commercial  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue: 07-Jun-1982  Licence Surrendered: 19-Nov-1982  Licence Holder Address: Selectapost 10, Civic Hall, Leeds  Operator: -  Licence Holder: Director of Leisure Services, Leeds City Council  First Recorded: 01-Apr-1982  Last Recorded: 31-Dec-1982</p>
Not shown	1057	NW		<p>Site Address: Opposite Outwood House, Outwood Lane, Little Hawksworth Wood, Horsforth, Leeds  Waste Licence: -  Site Reference: 4700/0195  Waste Type: Inert, Industrial, Commercial  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue:  Licence Surrendered:  Licence Holder Address: Outwood House, Outwood Lane, Horsforth, Leeds  Operator: J Baker  Licence Holder: J Baker  First Recorded: 01-Jan-1960  Last Recorded: -</p>
Not shown	1263	N		<p>Site Address: Woodside Quarry, Ring Road, Horsforth, Leeds, West Yorkshire  Waste Licence: Yes  Site Reference: 4700/0189, 949, NE4675  Waste Type: Inert, Commercial  Environmental Permitting Regulations  (Waste) Reference: YQ1/L/PAR004</p> <p>Licence Issue: 02-Jun-1980  Licence Surrendered: 20-Aug-2004  Licence Holder Address: Woodside Quarries, Ring Road, Leeds  Operator: Park Pit Landfill Limited  Licence Holder: A R Briggs and Company Limited  First Recorded: 31-Dec-1979  Last Recorded: 20-Mar-1990</p>
Not shown	1290	W		<p>Site Address: Land Adjacent to Factory, Abbey Road, Leeds  Waste Licence: Yes  Site Reference: 21, 4700/0214  Waste Type: Inert  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue: 25-Mar-1977  Licence Surrendered: 03-Mar-1993  Licence Holder Address: Abbey Road, Leeds  Operator: -  Licence Holder: Glen Axles Limited  First Recorded: 31-Dec-1958  Last Recorded: 16-Feb-1993</p>
Not shown	1427	SW		<p>Site Address: Wellington Mills, Broad Lane, Bramley  Waste Licence: Yes  Site Reference: 4700/0319  Waste Type: Inert, Commercial  Environmental Permitting Regulations  (Waste) Reference: -</p> <p>Licence Issue: 02-Jul-1982  Licence Surrendered: 31-Jan-1985  Licence Holder Address: Selectapost 10, Civic Hall, Leeds  Operator: -  Licence Holder: Director of Leisure Services, Leeds City Council  First Recorded: 31-Jul-1982  Last Recorded: 30-Sep-1984</p>
Not shown	1466	S		<p>Site Address: Old Ashfields, Central Electricity Gernerating Board, Kirkstall Power Station, Leeds</p> <p>Licence Issue: 21-Apr-1978  Licence Surrendered: 27-Mar-1986  Licence Holder Address: Star Garages,</p>

ID	Distance (m)	Direction	NGR	Details
				<p>Gelderd Road, Birstall, Batley, West Yorkshire</p> <p>Waste Licence: Yes Site Reference: 4700/0154 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: -</p> <p>Operator: Mones Brotheers Licence Holder: Mone Brothers Excavations Limited First Recorded: 31-Dec-1940 Last Recorded: 28-Feb-1986</p>
Not shown	1480	W		<p>Site Address: Pollard Lane, Bramley Fall Park, Leeds, West Yorkshire</p> <p>Waste Licence: - Site Reference: 4700/0099 Waste Type: Commercial Environmental Permitting Regulations (Waste) Reference: -</p> <p>Licence Issue: Licence Surrendered: Licence Holder Address: - Operator: M Harrison Licence Holder: M Harrison and Company Limited First Recorded: 31-Dec-1961 Last Recorded: -</p>

### 3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

### 3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

5

The following landfill records are represented as points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Site Address	Source	Data Type
17	383	W	425220 436603	Refuse Tip	1972 mapping	Polygon
Not shown	789	E	426535 436526	Refuse Tip	1970 mapping	Polygon
Not shown	789	E	426535 436526	Refuse Tip	1993 mapping	Polygon
Not shown	1169	W	424630 437098	Refuse Tip	1962 mapping	Polygon
Not shown	1169	W	424630 437098	Refuse Tip	1962 mapping	Polygon

## 3.2 Other Waste Sites

### 3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

### 3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

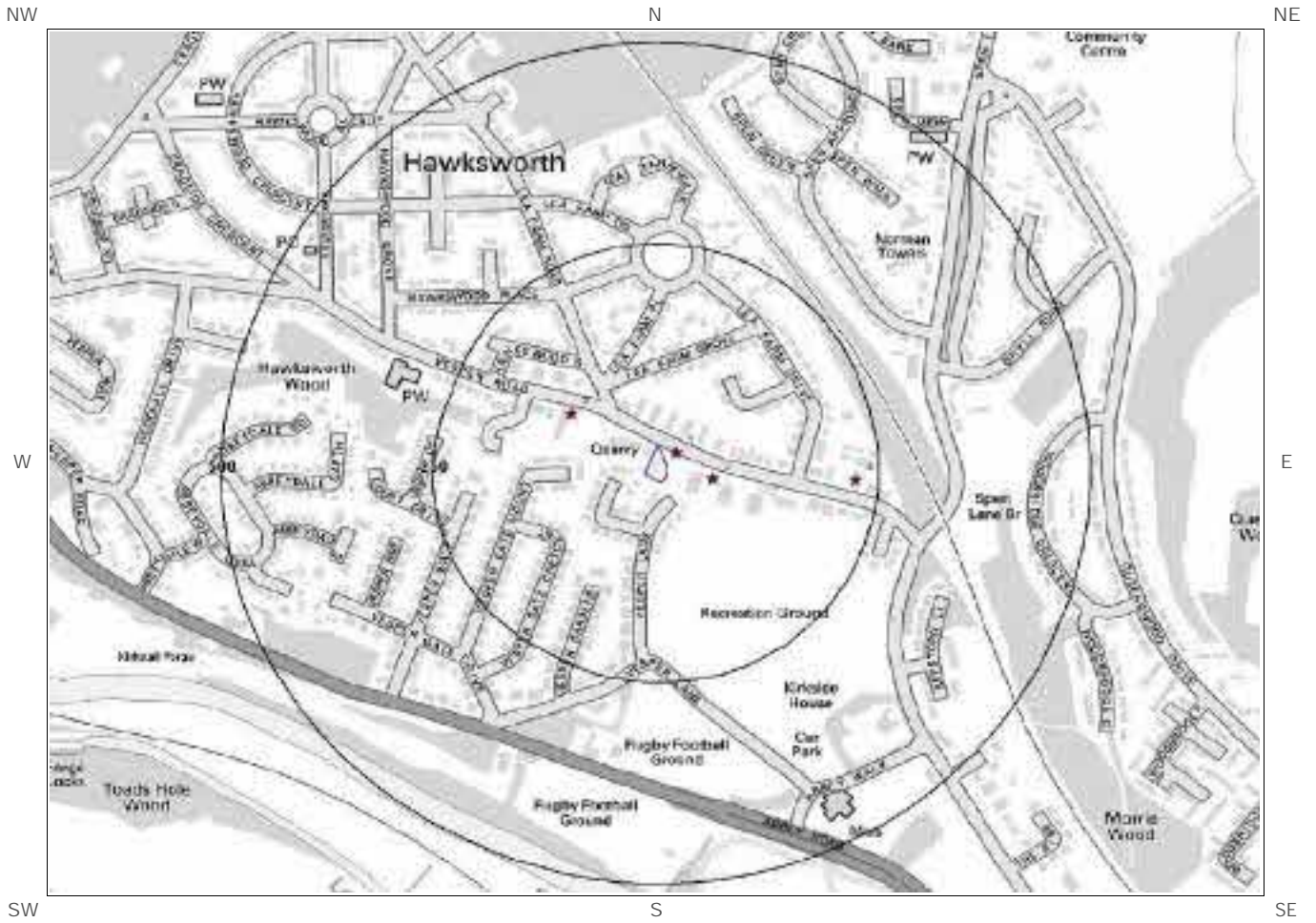
3

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	948	N	425500 437650	<p>Site Address: Land/premises At, Butcher Hill, Horsforth, Leeds, West Yorkshire, LS18 4HN</p> <p>Type: Landfill taking Non-Biodegradable Wastes</p> <p>Size: &lt; 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: MON008</p> <p>EPR reference: EA/EPR/EP3894ZR/S003</p> <p>Operator: Mone Bros Civil Engineering Ltd</p> <p>Waste Management licence No: 65098</p> <p>Annual Tonnage: 0.0</p> <p>Issue Date: 23/11/2000</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: May 20 2014 12:00AM</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Surrendered</p> <p>Site Name: Apex Quarry</p> <p>Correspondence Address: -</p>
Not shown	1194	NW	425190 437790	<p>Site Address: Cornmill Fold, Woodside, Horsforth, Leeds, West Yorkshire, LS18 4DE</p> <p>Type: Metal Recycling Site (Vehicle Dismantler)</p> <p>Size: &lt; 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: JAD001</p> <p>EPR reference: EA/EPR/YP3094ZQ/S002</p> <p>Operator: J A Dickinson</p> <p>Waste Management licence No: 65155</p> <p>Annual Tonnage: 5000.0</p> <p>Issue Date: 05/02/1996</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: Mar 28 2003 12:00AM</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Surrendered</p> <p>Site Name: Dickinson</p> <p>Correspondence Address: -</p>
Not shown	1422	NW	425100 438000	<p>Site Address: Lambert Terrace, Horsforth, Leeds, West Yorkshir</p> <p>Type: Metal Recycling Site (mixed MRS's)</p> <p>Size: &lt; 25000 tonnes</p> <p>Environmental Permitting Regulations (Waste) Licence Number: CSD001</p> <p>EPR reference: EA/EPR/WP3794ZF/A002</p> <p>Operator: C S Davidson</p> <p>Waste Management licence No: 65123</p> <p>Annual Tonnage: 30000.0</p> <p>Issue Date: 20/02/1991</p> <p>Effective Date: -</p> <p>Modified: -</p> <p>Surrendered Date: Jul 8 2003 12:00AM</p> <p>Expiry Date: -</p> <p>Cancelled Date: -</p> <p>Status: Surrendered</p> <p>Site Name: Davidsons</p> <p>Correspondence Address: -</p>



# 4. Current Land Use Map



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- |   |                    |   |                          |  |                                 |
|---|--------------------|---|--------------------------|--|---------------------------------|
|  | Site Outline       |  | Current Industrial Sites |  | Electricity Transmission Cables |
|  | Search Buffers (m) |  | Petrol & Fuel Sites      |  | Gas Transmission Pipelines      |



# 4. Current Land Uses

## 4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 4

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	16	E	Gas Governor Station	425772 436726	West Yorkshire, LS5	Gas Features	Infrastructure and Facilities
2	55	E	Electricity Sub Station	425816 436694	West Yorkshire, LS5	Electrical Features	Infrastructure and Facilities
3	110	W	Quarry (Disused)	425648 436775	West Yorkshire, LS5	Unspecified Quarries Or Mines	Extractive Industries
4	223	E	Regency Recovery	425984 436692	10, Vesper Road, Leeds, West Yorkshire, LS5 3NX	Vehicle Breakdown and Recovery Services	Personal, Consumer and Other Services

## 4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

## 4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

#### 4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

---

# 5. Geology

## 5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

---

## 5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
HRT-CSV	HARROGATE TILL FORMATION	CLAY, SANDY, GRAVELLY

---

## 5.3 Bedrock and Solid Geology

The database has been searched on site, including a 50m buffer.

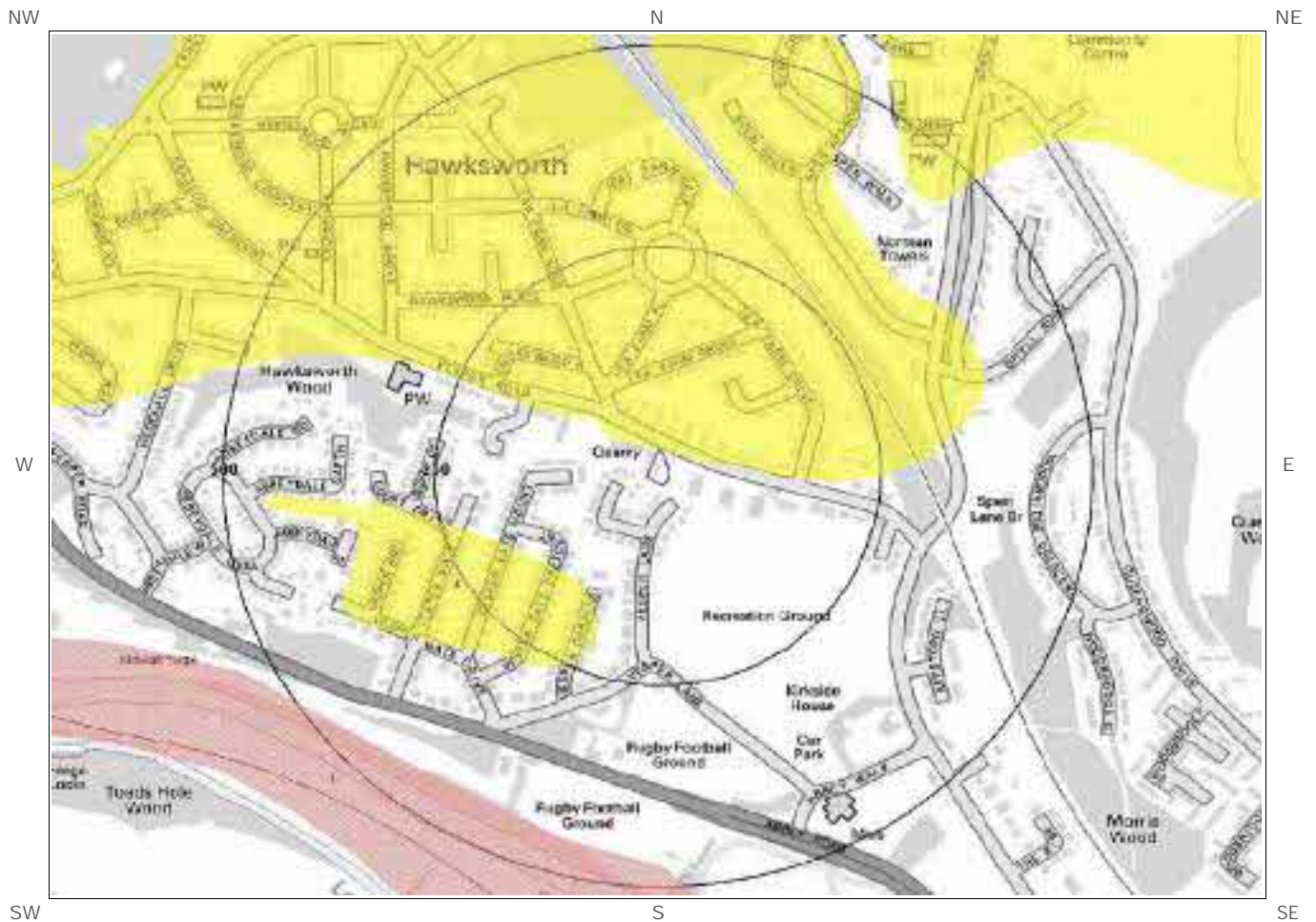
Lex Code	Description	Rock Type
RR-SDST	ROUGH ROCK	SANDSTONE
PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
MG-MDSS	MILLSTONE GRIT GROUP [SEE ALSO MIGR]	MUDSTONE, SILTSTONE AND SANDSTONE

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

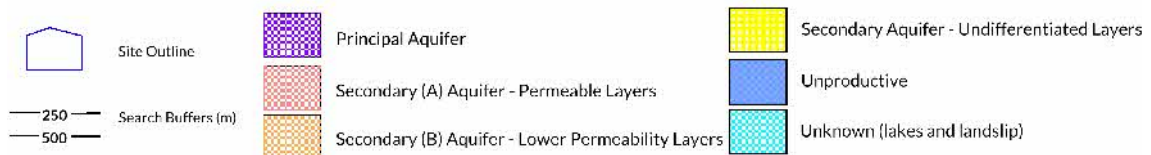
---

# 6 Hydrogeology and Hydrology

## 6a. Aquifer Within Superficial Geology



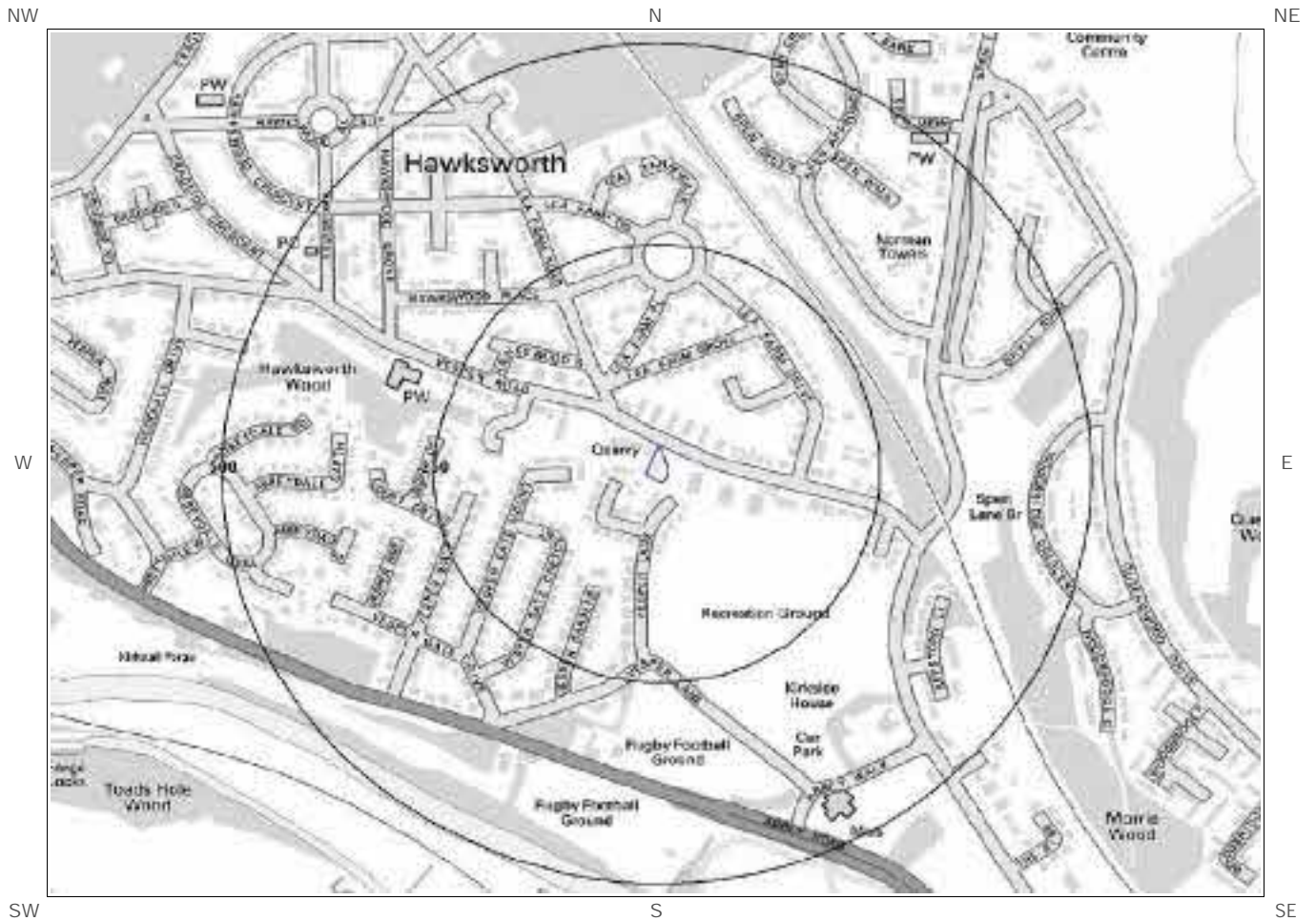
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# 6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences

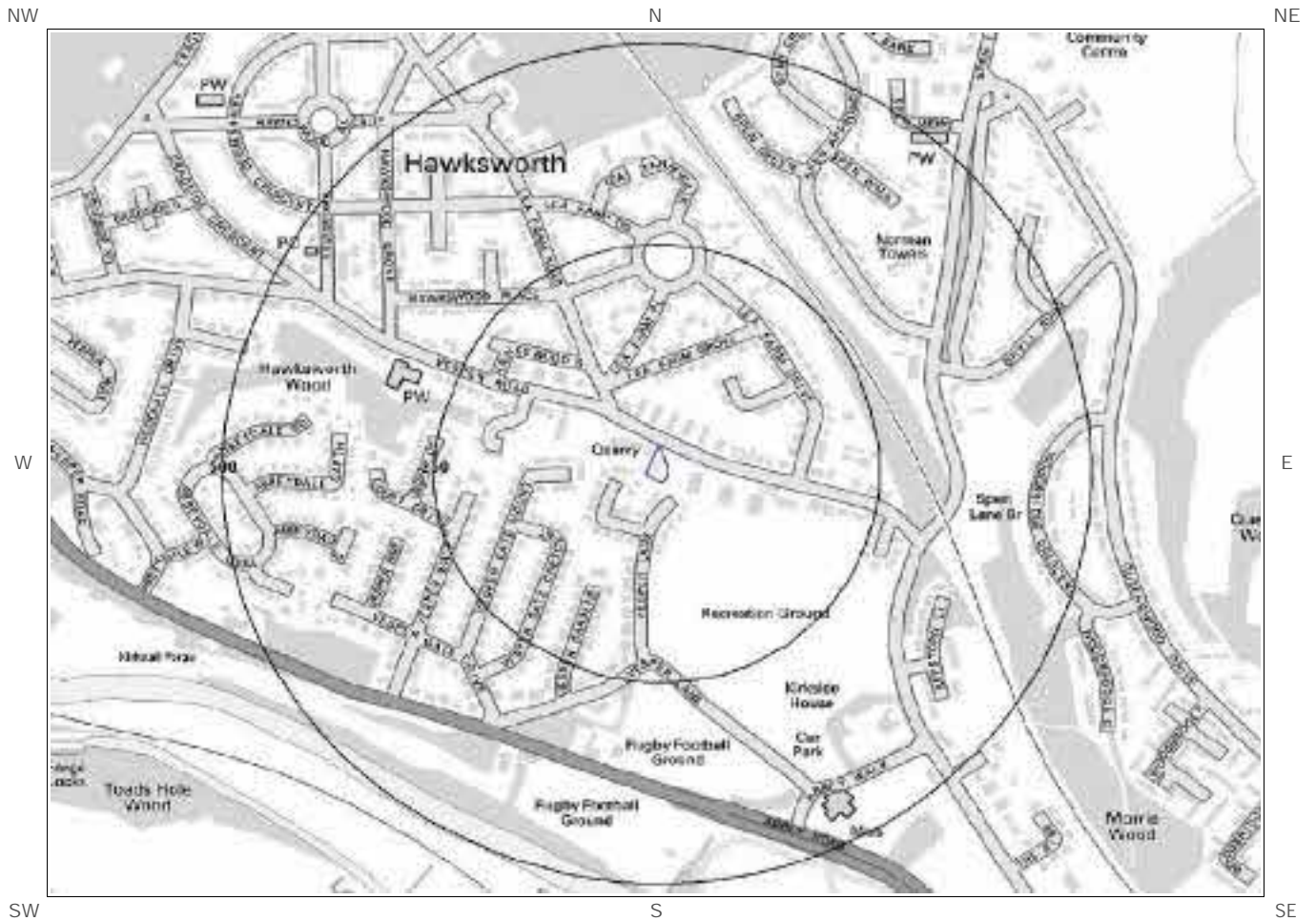


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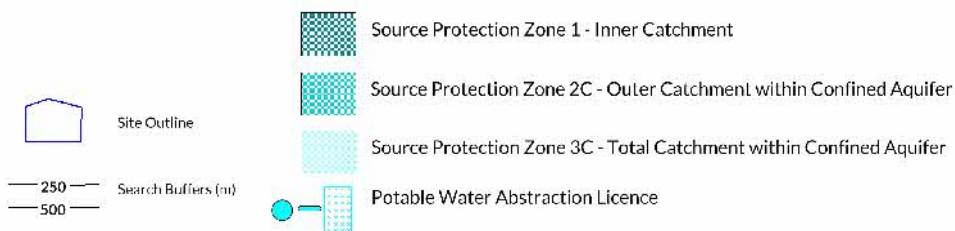




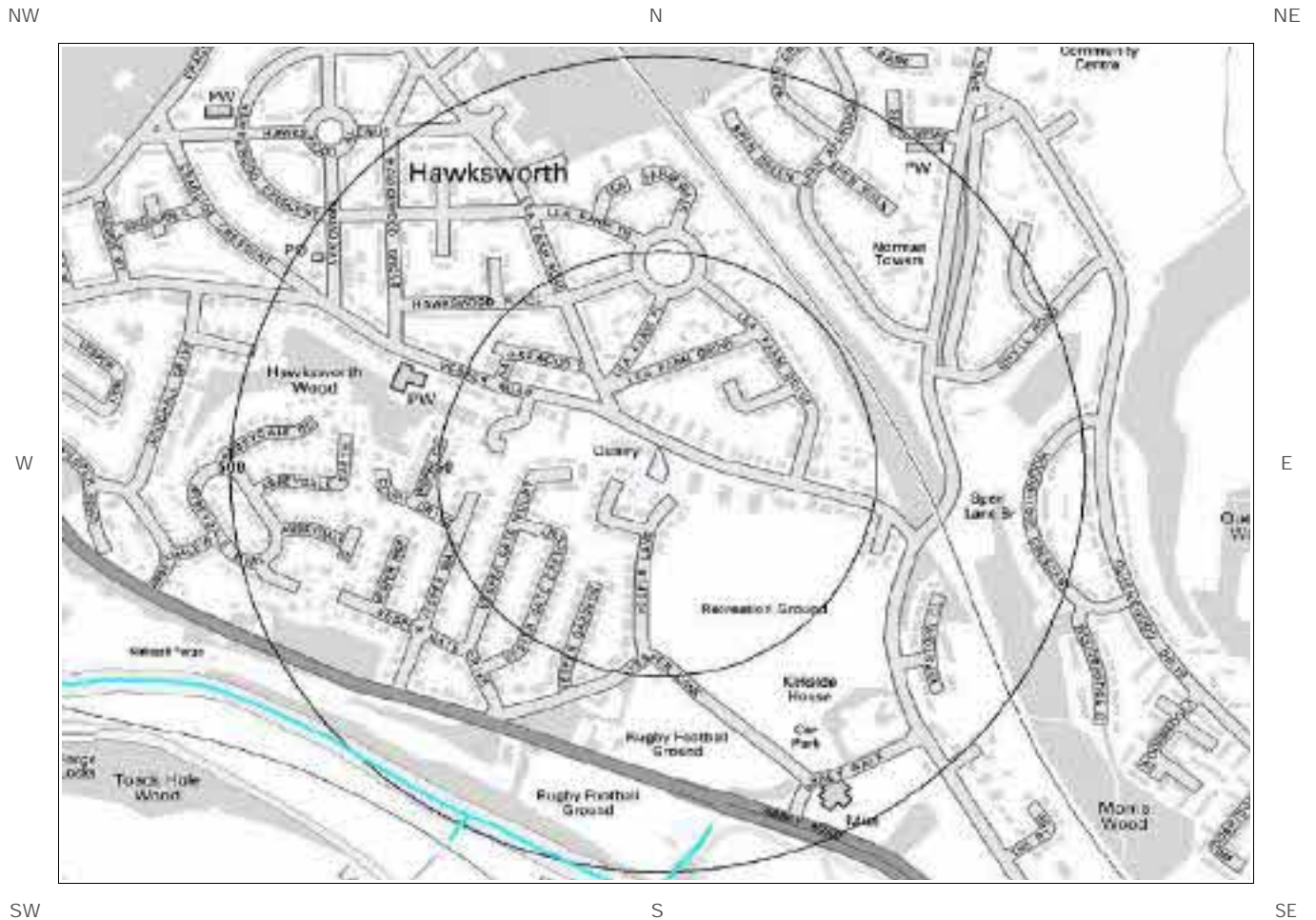
# 6d. Hydrogeology – Source Protection Zones within confined aquifer



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# 6e. Hydrology – Watercourse Network and River Quality



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# 6. Hydrogeology and Hydrology

## 6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
3	0	On Site	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
4	153	SW	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	445	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

## 6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

## 6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site

Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1011	W	424660 436640	Status: Historical Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: WELL POINT SYSTEM-KIRKSTALL-LEEDS 5 Data Type: Poly4 Name: DANA SPICER EUROPE LIMITED Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 101 Version Start Date: 14/05/2002 Version End Date:
Not shown	1011	W	424660 436640	Status: Active Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: WELL POINT SYSTEM- SUPERFICIAL DRIFT-KIRKSTALL-LEEDS 5 Data Type: Poly4 Name: GMV TWELVE LTD Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1040	W	424700 436600	Status: Historical Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 100 Version Start Date: 28/02/1997 Version End Date:
Not shown	1054	W	424700 436500	Status: Historical Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 100 Version Start Date: 28/02/1997 Version End Date:
Not shown	1140	W	424600 436600	Status: Historical Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 100 Version Start Date: 28/02/1997 Version End Date:
Not shown	1153	W	424600 436500	Status: Historical Licence No: 2/27/17/171 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Annual Volume (m³): 575,000 Max Daily Volume (m³): - Original Application No: - Original Start Date: 26/08/1983 Expiry Date: - Issue No: 100 Version Start Date: 28/02/1997 Version End Date:



## 6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site

Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	827	S	426000 435900	Status: Historical Licence No: 2/27/17/209 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER Point: RIVER AIRE - KIRKSTALL ABBEY GARDENS Data Type: Point Name: LEEDS RUGBY LTD Annual Volume (m <sup>3</sup> ): 24,000 Max Daily Volume (m <sup>3</sup> ): 300 Application No: - Original Start Date: 11/06/2002 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 11/06/2002 Version End Date:
Not shown	913	S	426072 435833	Status: Active Licence No: 2/27/17/209/R01 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER Point: RIVER AIRE - KIRKSTALL ABBEY GARDENS Data Type: Point Name: LEEDS RUGBY LTD Annual Volume (m <sup>3</sup> ): 20,000 Max Daily Volume (m <sup>3</sup> ): 300 Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date:
Not shown	1026	W	424710 436660	Status: Active Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: RIVER AIRE-KIRKSTALL Data Type: Point Name: GMV TWELVE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1097	W	424640 436760	Status: Active Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: RIVER AIRE-KIRKSTALL Data Type: Point Name: GMV TWELVE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1103	NW	424750 437200	Status: Historical Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: COW BECK-HAWKSWORTH WOOD-KIRKSTALL Data Type: Point Name: GERARD VERSTEEGH HOLDINGS LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 102 Version Start Date: 01/04/2003 Version End Date:
Not shown	1103	NW	424750 437200	Status: Active Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: COW BECK - HAWKSWORTH WOOD - KIRKSTALL Data Type: Point Name: GMV TWELVE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1118	W	424620 436770	Status: Historical Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: RIVER AIRE Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 100

ID	Distance (m)	Direction	NGR	Details
				Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Version Start Date: 28/02/1997 Version End Date:
Not shown	1118	W	424620 436770	Status: Historical Licence No: 2/27/17/144 Details: General use relating to Secondary Category (High Loss) Direct Source: SURFACE WATER Point: RIVER AIRE Data Type: Point Name: DANA SPICER AXLE EUROPE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 100 Version Start Date: 28/02/1997 Version End Date:
Not shown	1262	W	424490 436900	Status: Historical Licence No: 2/27/17/144 Details: General use relating to Secondary Category (High Loss) Direct Source: SURFACE WATER Point: COW BECK-KIRSTALL Data Type: Point Name: DANA SPICER EUROPE LIMITED Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 101 Version Start Date: 14/05/2002 Version End Date:
Not shown	1262	W	424490 436900	Status: Active Licence No: 2/27/17/144 Details: Boiler Feed Direct Source: SURFACE WATER Point: COW BECK-KIRSTALL Data Type: Point Name: GMV TWELVE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1262	W	424490 436900	Status: Active Licence No: 2/27/17/144 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: SURFACE WATER Point: COW BECK-KIRSTALL Data Type: Point Name: GMV TWELVE LTD Annual Volume (m <sup>3</sup> ): 336,320 Max Daily Volume (m <sup>3</sup> ): 2,821 Application No: - Original Start Date: 16/12/1970 Expiry Date: - Issue No: 105 Version Start Date: 16/08/2010 Version End Date:
Not shown	1432	S	426100 435300	Status: Active Licence No: 2/27/17/209/R01 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER Point: RIVER AIRE - KIRKSTALL RUGBY FIELDS Data Type: Point Name: LEEDS RUGBY LTD Annual Volume (m <sup>3</sup> ): 20,000 Max Daily Volume (m <sup>3</sup> ): 300 Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date:
Not shown	1432	S	426100 435300	Status: Historical Licence No: 2/27/17/209 Details: Spray Irrigation - Direct Direct Source: SURFACE WATER Point: RIVER AIRE - KIRKSTALL RUGBY FIELDS Data Type: Point Name: LEEDS RUGBY LTD Annual Volume (m <sup>3</sup> ): 24,000 Max Daily Volume (m <sup>3</sup> ): 300 Application No: - Original Start Date: 11/06/2002 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 11/06/2002 Version End Date:
Not shown	1892	SE	426500 434950	Status: Historical Licence No: 2/27/17/186 Details: Make-Up or Top Up Water Direct Source: SURFACE WATER Point: RIVER AIRE Data Type: Point Name: YORKSHIRE WILDLIFE TRUST Annual Volume (m <sup>3</sup> ): - Max Daily Volume (m <sup>3</sup> ): - Application No: - Original Start Date: 22/09/1994 Expiry Date: - Issue No: 100 Version Start Date: 22/09/1994 Version End Date:



## 6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site

None identified

Database searched and no data found.

## 6.6 Source Protection Zones

Source Protection Zones within 500m of the study site

None identified

Database searched and no data found.

## 6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site

None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

## 6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site

Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Minor Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

## 6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site

Identified

### 6.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1291	W	424456 436874	River Name: Aire Reach: Sandoz Oil Mill Beck End/Start of Stretch: End of Stretch NGR	E	E	D	D	D

### 6.9.2 Chemical Quality:

Chemical quality data is based on the General Quality Assessment Headline Indicators scheme (GOAHI). In England, each chemical sample is measured for ammonia and dissolved oxygen. In Wales, the samples are measured for biological oxygen demand (BOD), ammonia and dissolved oxygen. The results are graded from A ('Very Good') to F ('Bad').

The following Chemical Quality records are shown on the Hydrology Map (6e):

ID	Distance (m)	Direction	NGR	River Quality Grade	Chemical Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1129	S	425968 435581	River Name: River Aire Reach: Oil Mill Beck Low Beck (leeds/live End/Start of Stretch: Sample Point NGR	C	C	C	B	B
Not shown	1291	W	424456 436874	River Name: River Aire Reach: Sandoz Oil Mill Beck End/Start of Stretch: End of Stretch NGR	D	D	C	C	B
Not shown	1291	W	424456 436874	River Name: River Aire Reach: Oil Mill Beck Low Beck (leeds/live End/Start of Stretch: Start of Stretch NGR	C	C	C	B	B

## 6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	445 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	445 S	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	485 SW	River Aire Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 28.8
Not shown	485 SW	River Aire Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 28.8
3	486 SW	River Aire Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 28.8
4	486 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	486 SW	River Aire Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): 28.8
Not shown	486 SW	- Alternative Name: -	Inland river not influenced by normal tidal action.	Catchment Area: Aire and Calder Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

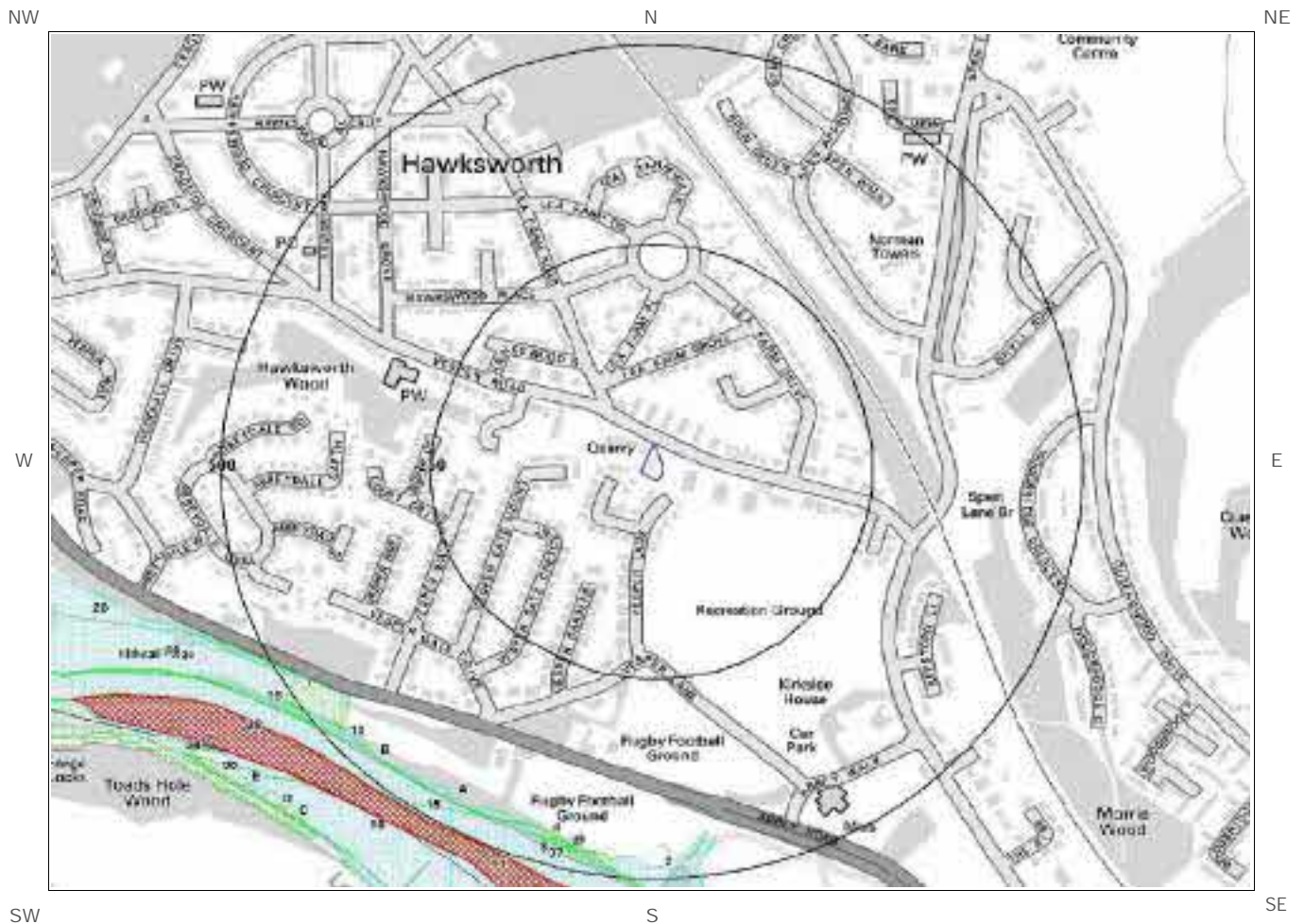
## 6.11 Surface Water Features

Surface water features within 250m of the study site

None identified

Database searched and no data found.

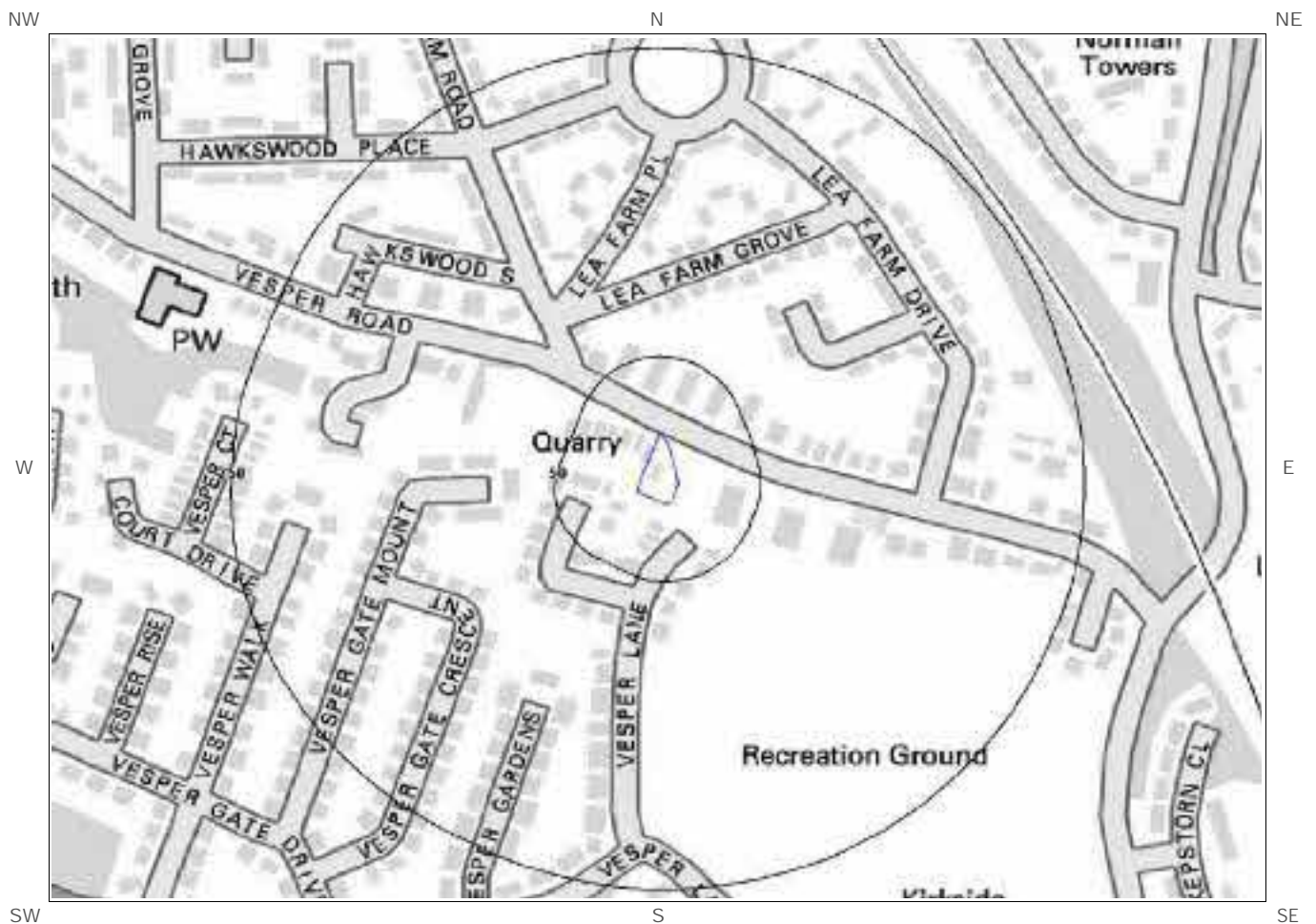
# 7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



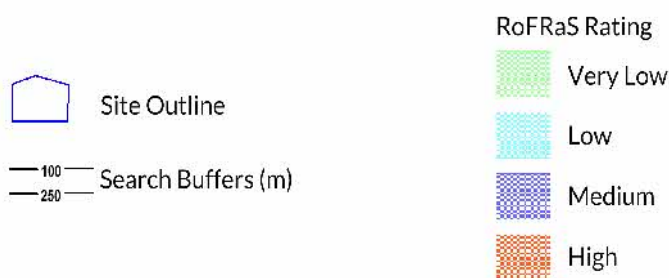
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# 7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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# 7 Flooding

## 7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a –Flood Map for Planning:

Database searched and no data found.

---

## 7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a –Flood Map for Planning.

Database searched and no data found.

---

## 7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

---

## 7.4 Flood Defences

Flood Defences within 250m of the study site None identified  
Database searched and no data found.

---

## 7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site None identified

---



## 7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site None identified

---

## 7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site Identified

Clearwater Flooding or Superficial Deposits Flooding Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

---

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Potential at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

---

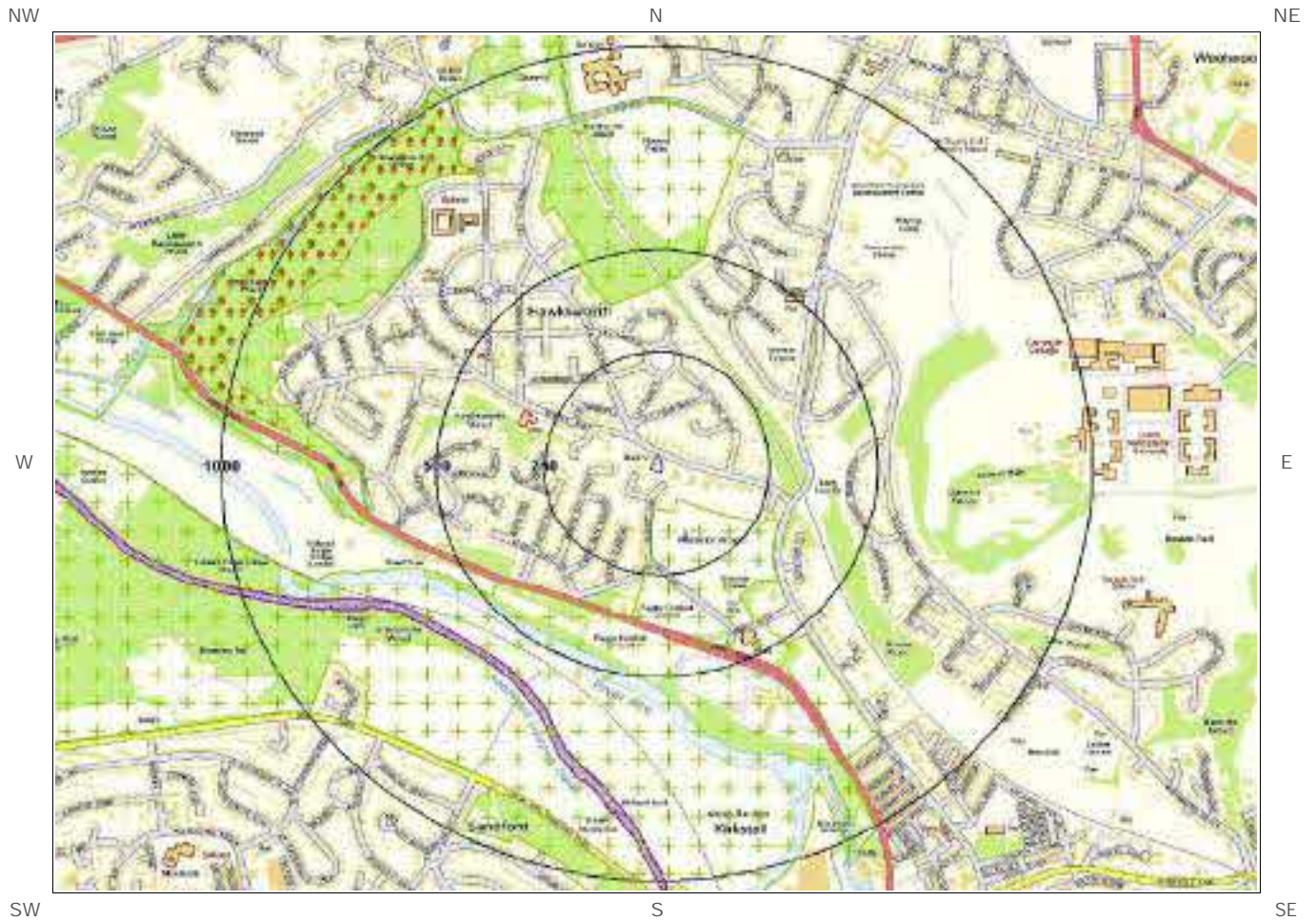
## 7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result Low

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

# 8. Designated Environmentally Sensitive Sites Map



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# 8. Designated Environmental Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site

Identified

## 8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
1	588	SW	Leeds - Liverpool Canal	Natural England

## 8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

## 8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

## 8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

## 8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

## 8.6 Records of Ancient Woodland within 2000m of the study site:

2

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
2	808	NW	HAWKSWORTH WOOD	Ancient Replanted Woodland
Not shown	1396	N	CLAYTON/IRELAND WOODS	Ancient Replanted Woodland

## 8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

## 8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

## 8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

## 8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

## 8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

### 8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

---

### 8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

---

### 8.14 Records of Green Belt land within 2000m of the study site:

2

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
4	78	SE	Liverpool, Manchester and West Yorks Greenbelt	Leeds
Not shown	1972	NE	Liverpool, Manchester and West Yorks Greenbelt	Leeds

---

# 9. Natural Hazards Findings

## 9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a [Groundsure Geo Insight](#), available from our website. The following information has been found:

### 9.1.1 Shrink Swell

Maximum Shrink-Swell\*\* hazard rating identified on the study site Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

---

### 9.1.2 Landslides

Maximum Landslide\* hazard rating identified on the study site Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property no significant increase in insurance risk due to natural slope instability problems.

---

### 9.1.3 Soluble Rocks

Maximum Soluble Rocks\* hazard rating identified on the study site Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

---



---

\* This indicates an automatically generated 50m buffer and site.



#### 9.1.4 Compressible Ground

Maximum Compressible Ground\* hazard rating identified on the study site

Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

---

#### 9.1.5 Collapsible Rocks

Maximum Collapsible Rocks\* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

---

#### 9.1.6 Running Sand

Maximum Running Sand\*\* hazard rating identified on the study site

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

---

**Hazard**

---

Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

---



---

\* This indicates an automatically generated 50m buffer and site.

## 9.2 Radon

### 9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

---

### 9.2.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

# 10. Mining

## 10.1 Coal Mining

Coal mining areas within 75m of the study site

Identified

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The site lies in or in proximity to the coal mining reporting area as defined by the Coal Authority

## 10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary

Identified

The following non-coal mining information is provided by the BGS:

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
0.0	On Site	Not available	Vein Mineral	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

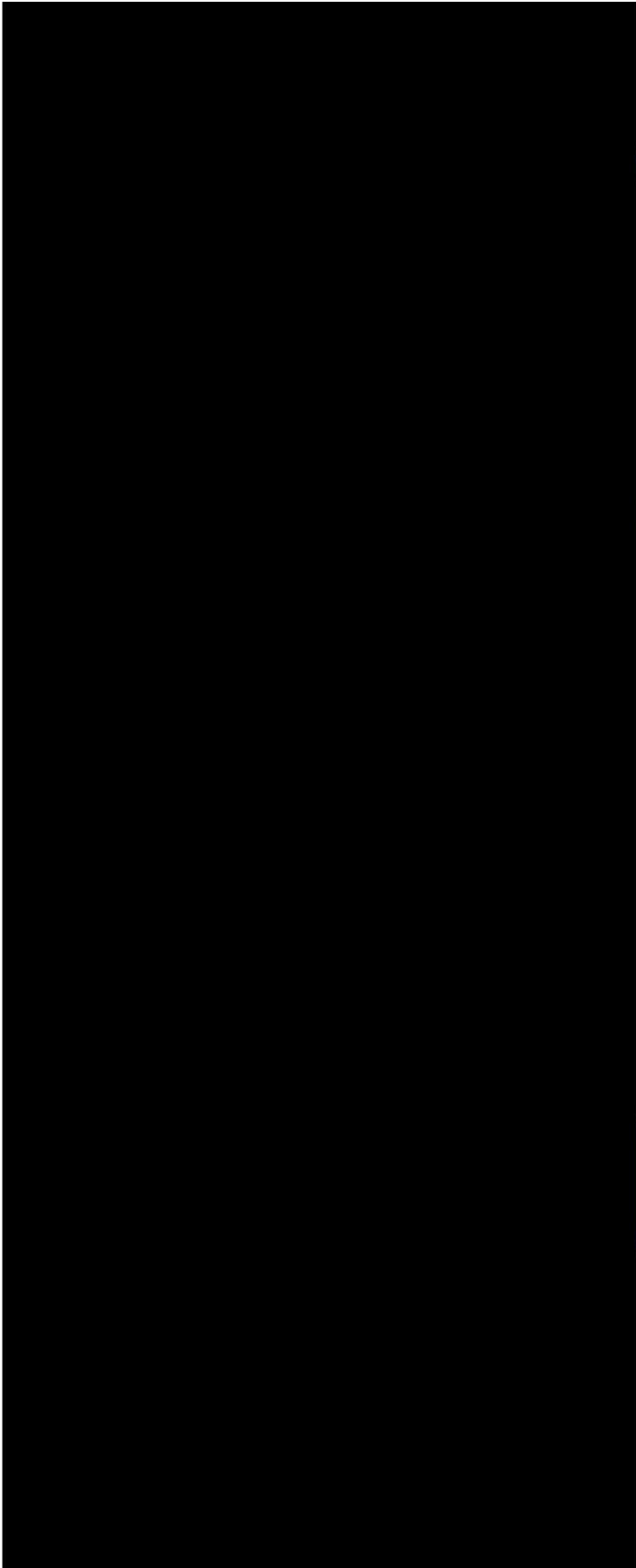
## 10.3 Brine Affected Areas

Brine affected areas within 75m of the study site

None identified

Guidance: No Guidance Required.

# Contact Details



Public Health  
England



The Coal  
Authority



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England/Natural Resources Wales who retain the Copyright and Intellectual Property Rights for the data.

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# Appendix C

## Historical Maps





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**Report Ref:** GS-6567187  
**Grid Ref:** 425749, 436712

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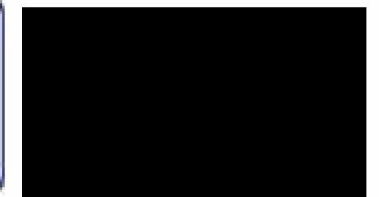
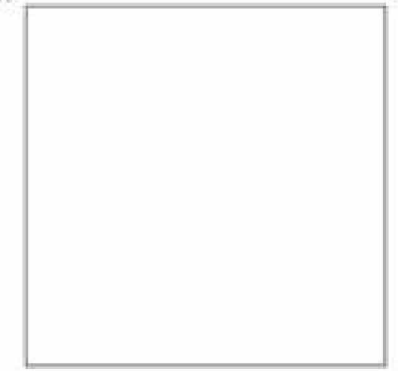
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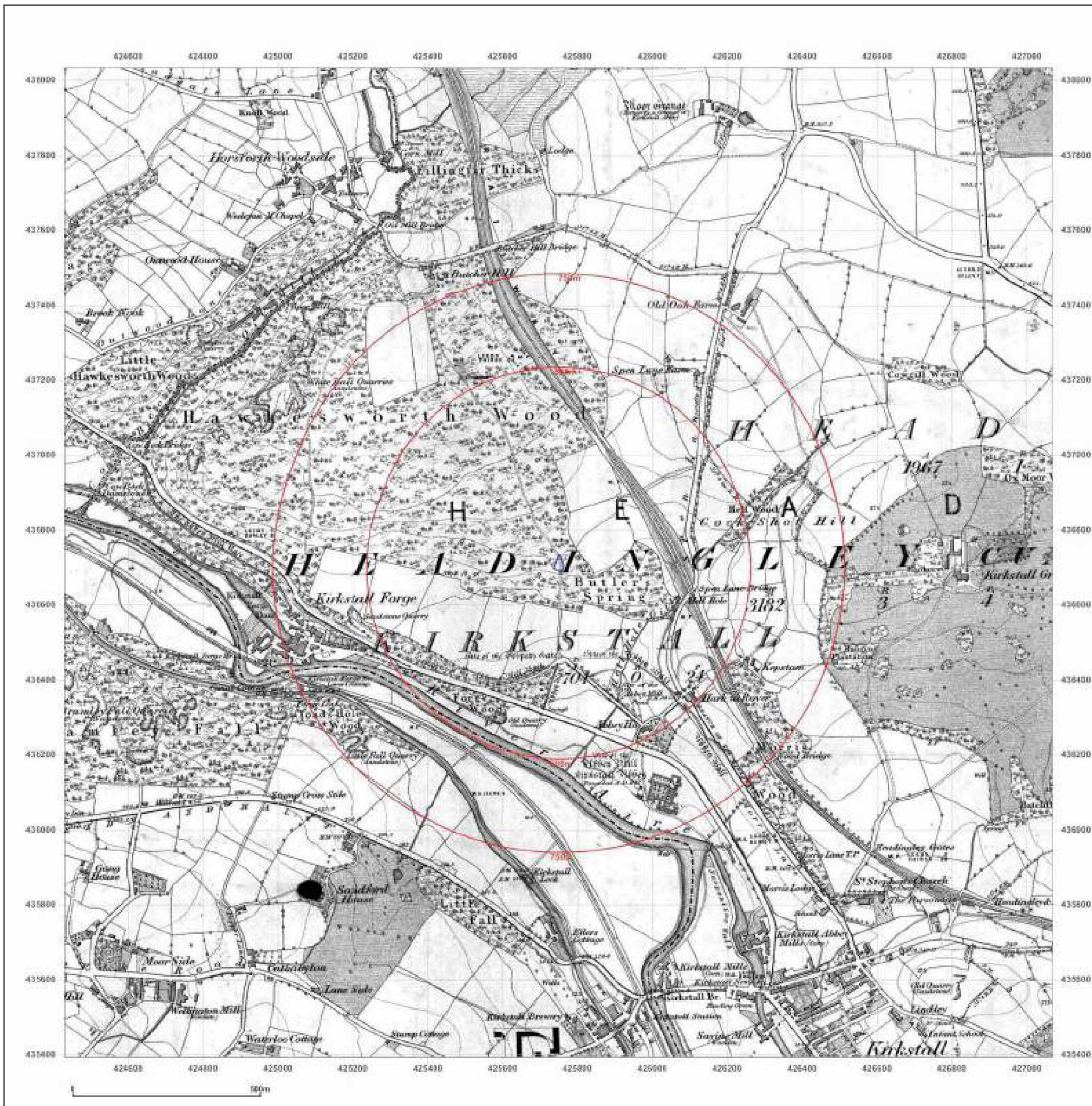
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Revised N/A  
Edition 1851  
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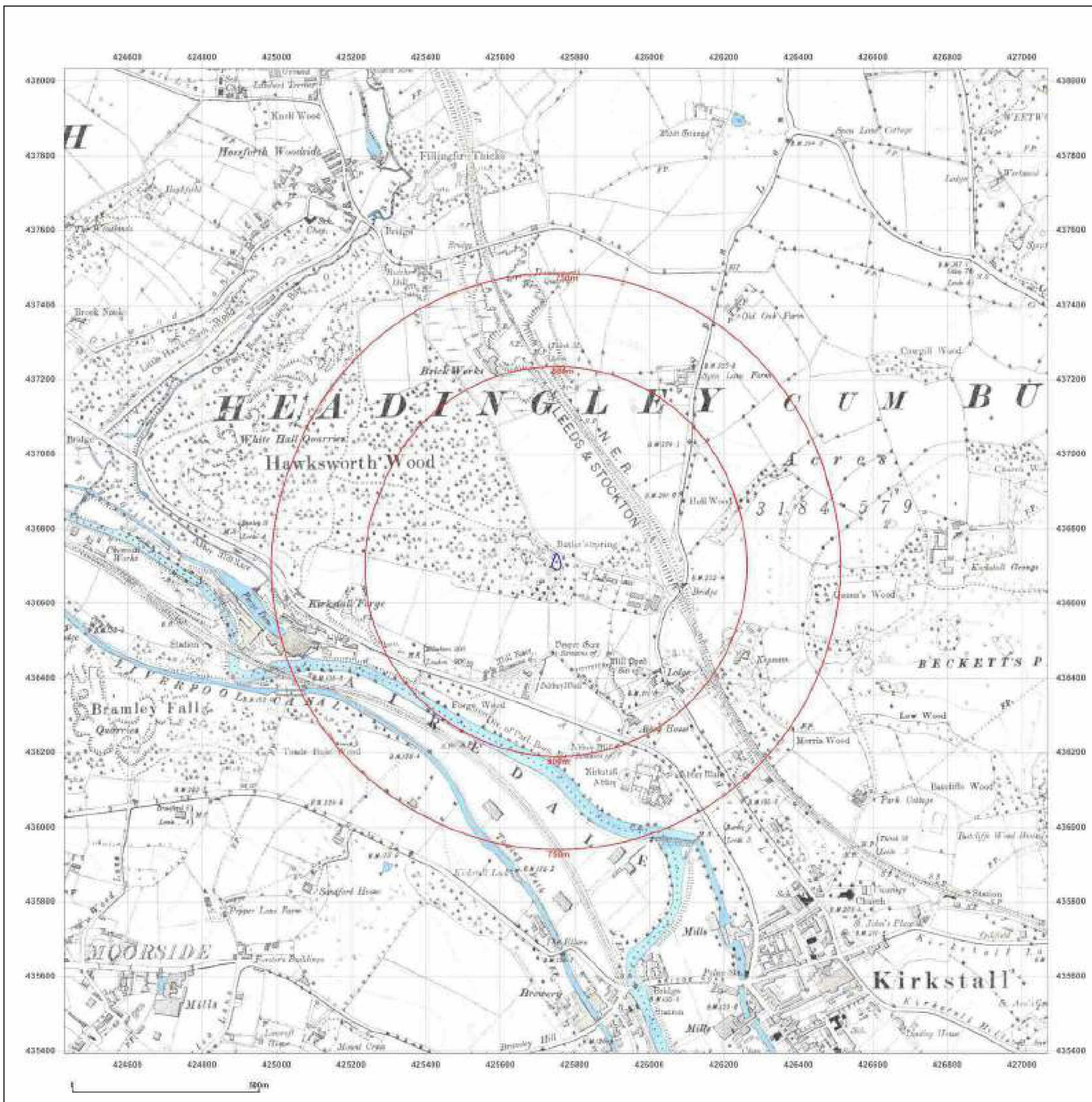
Surveyed 1892  
Revised 1892  
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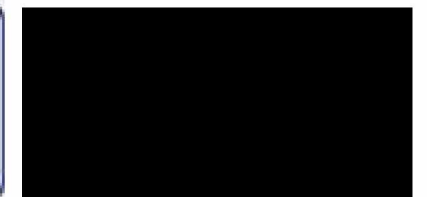
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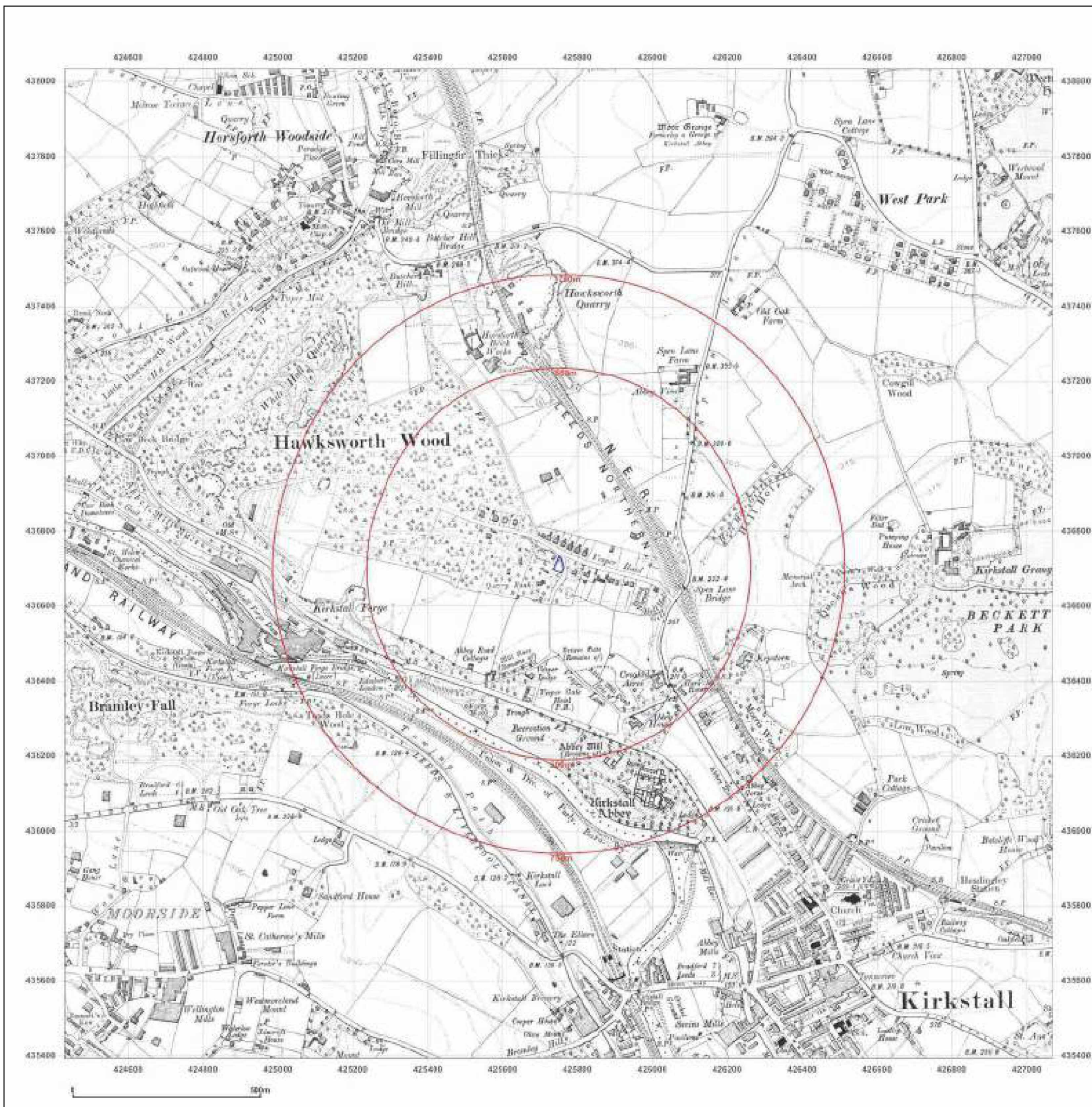
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Revised 1906  
Edition N/A  
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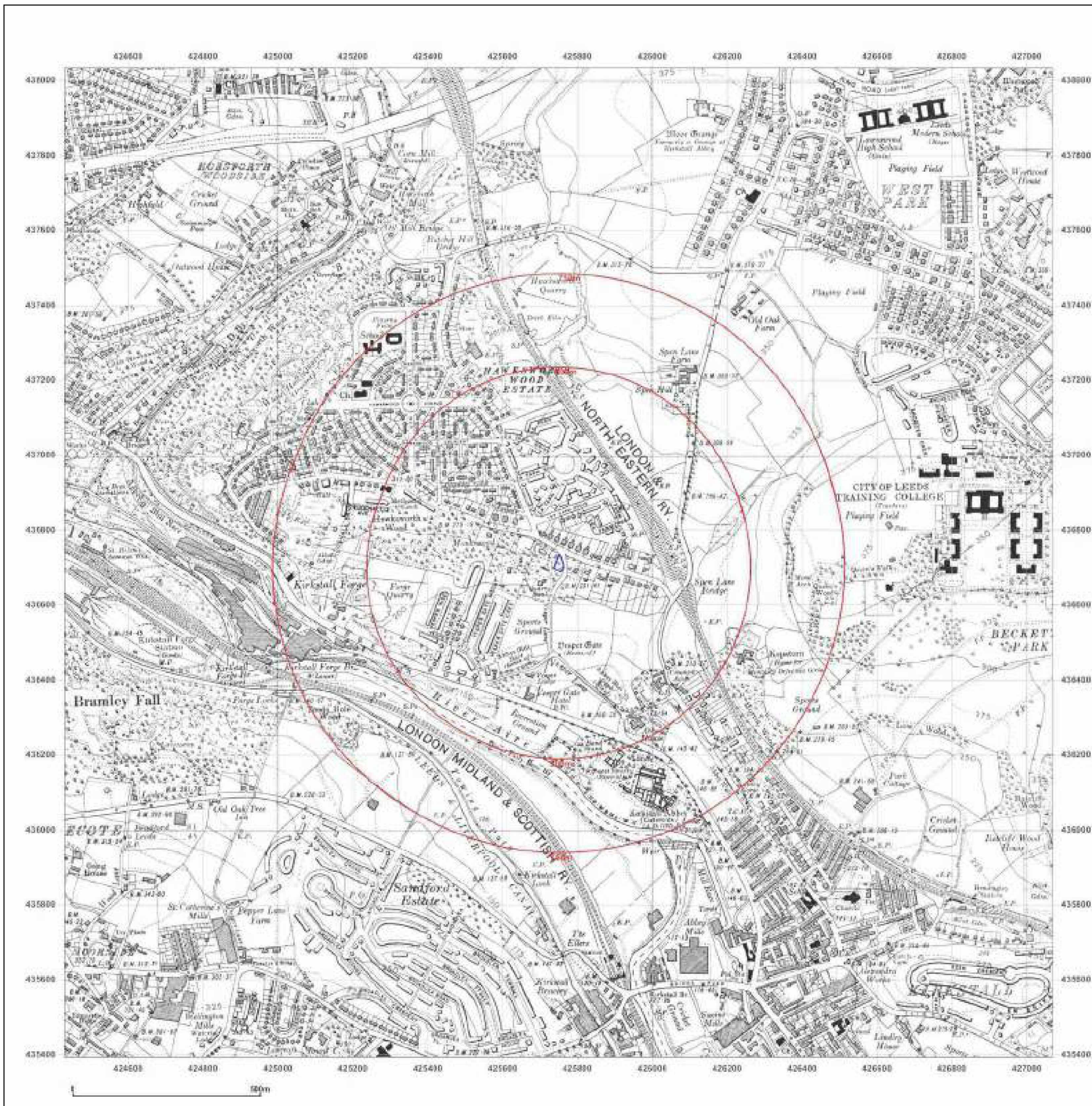
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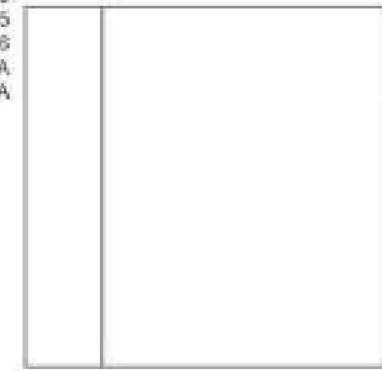
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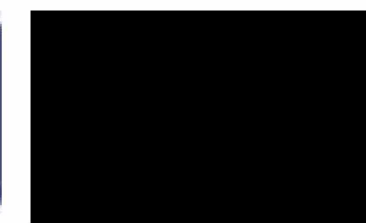
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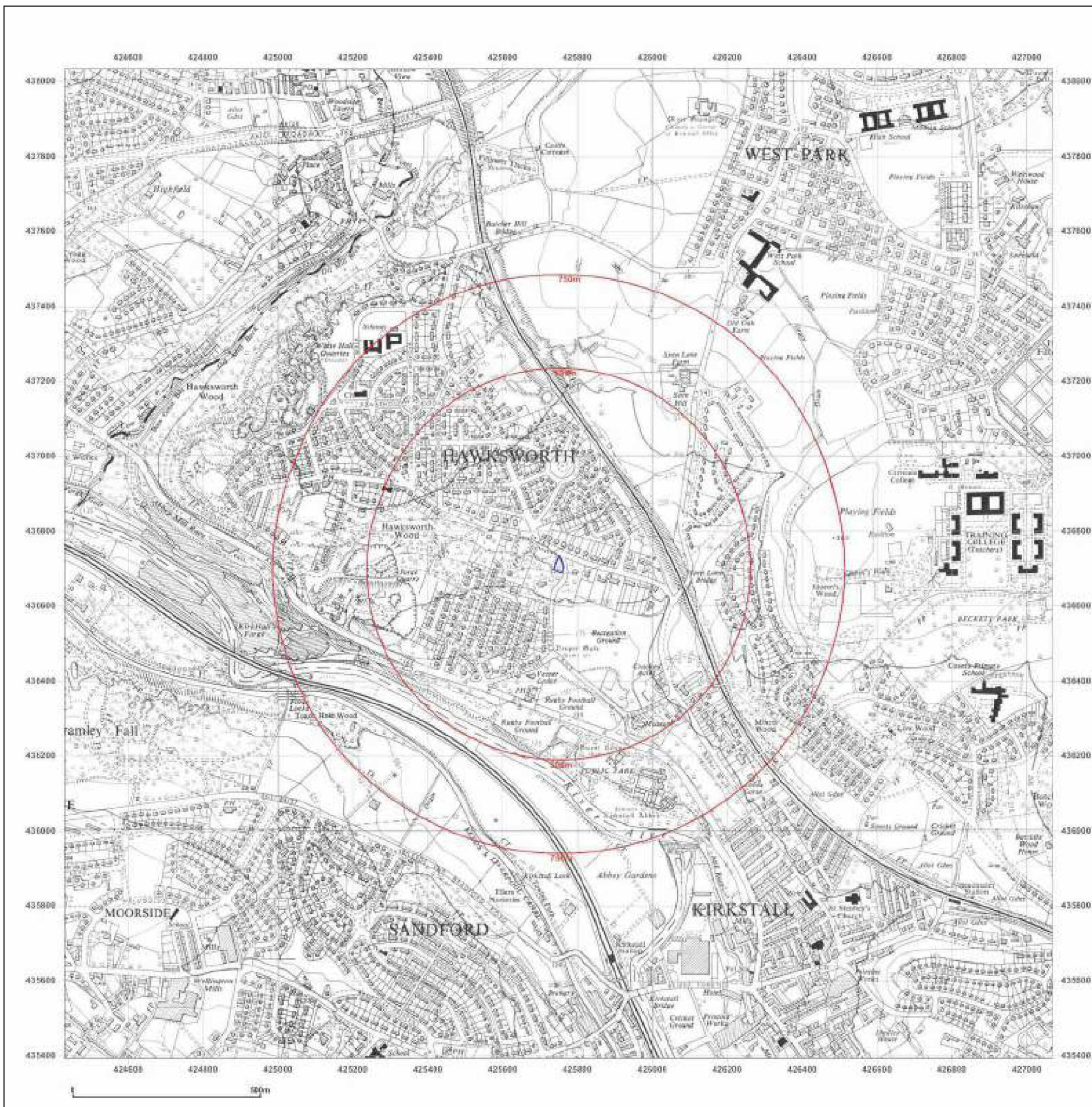
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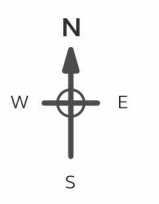
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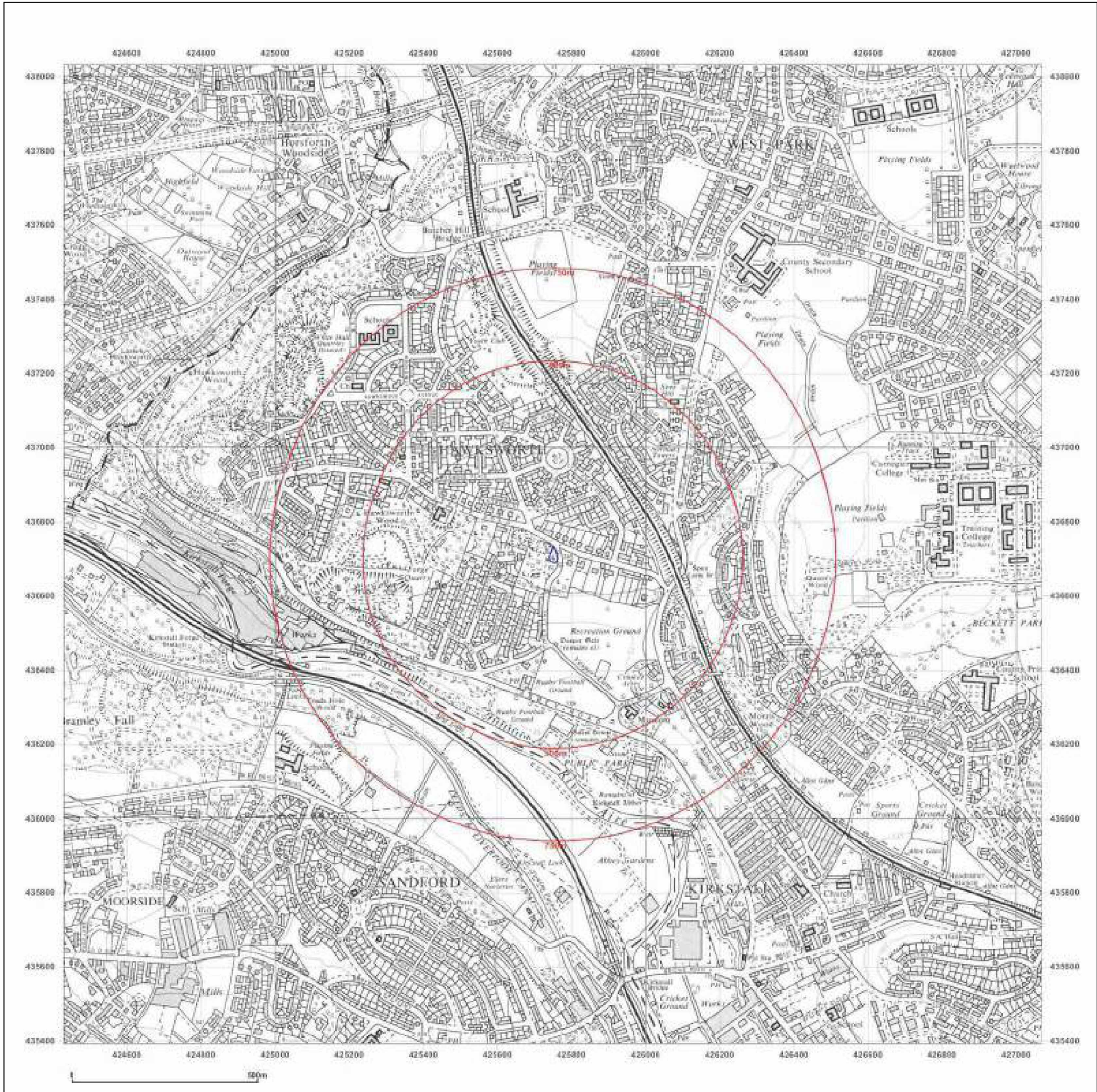
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Revised 1987  
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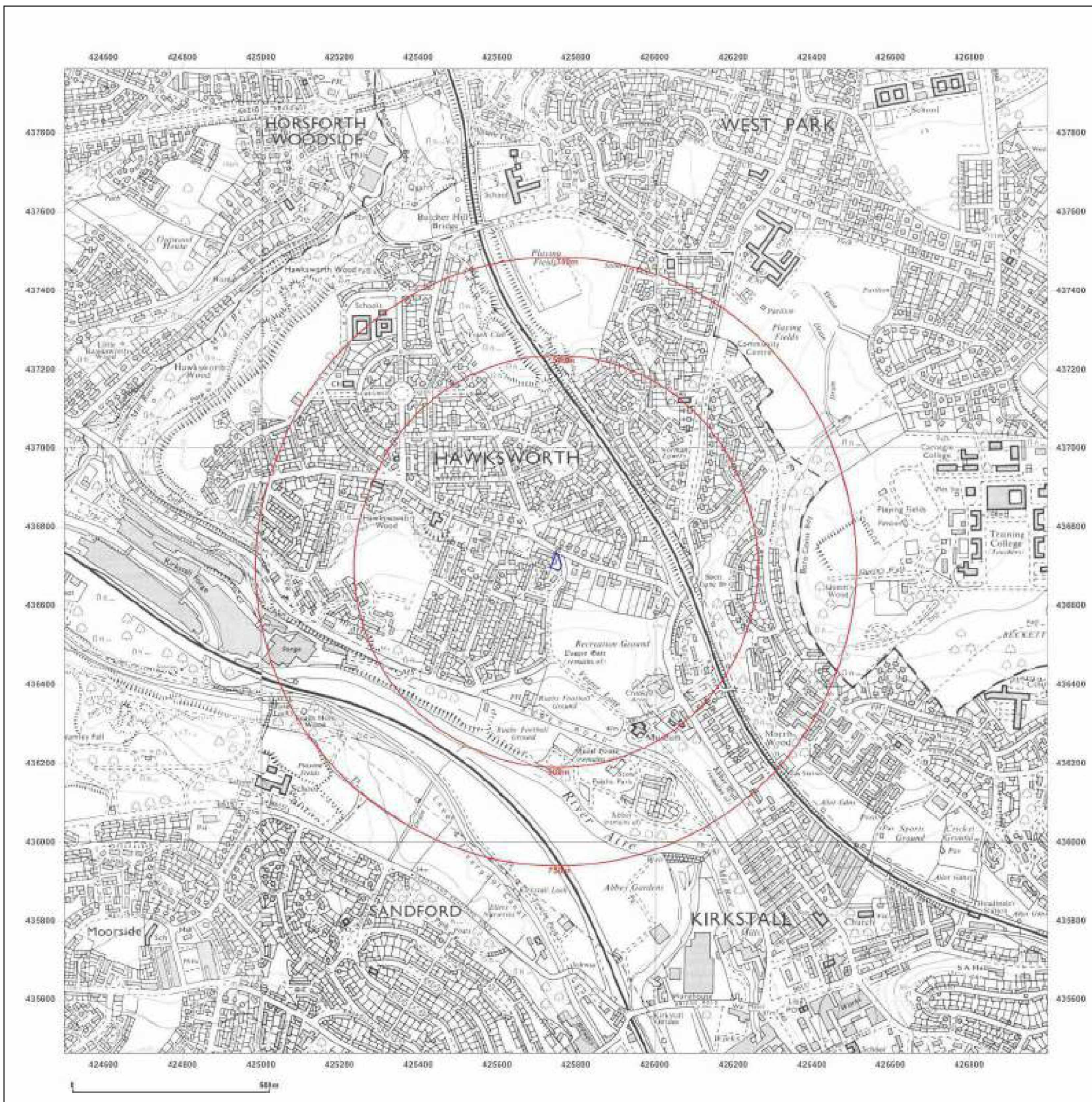
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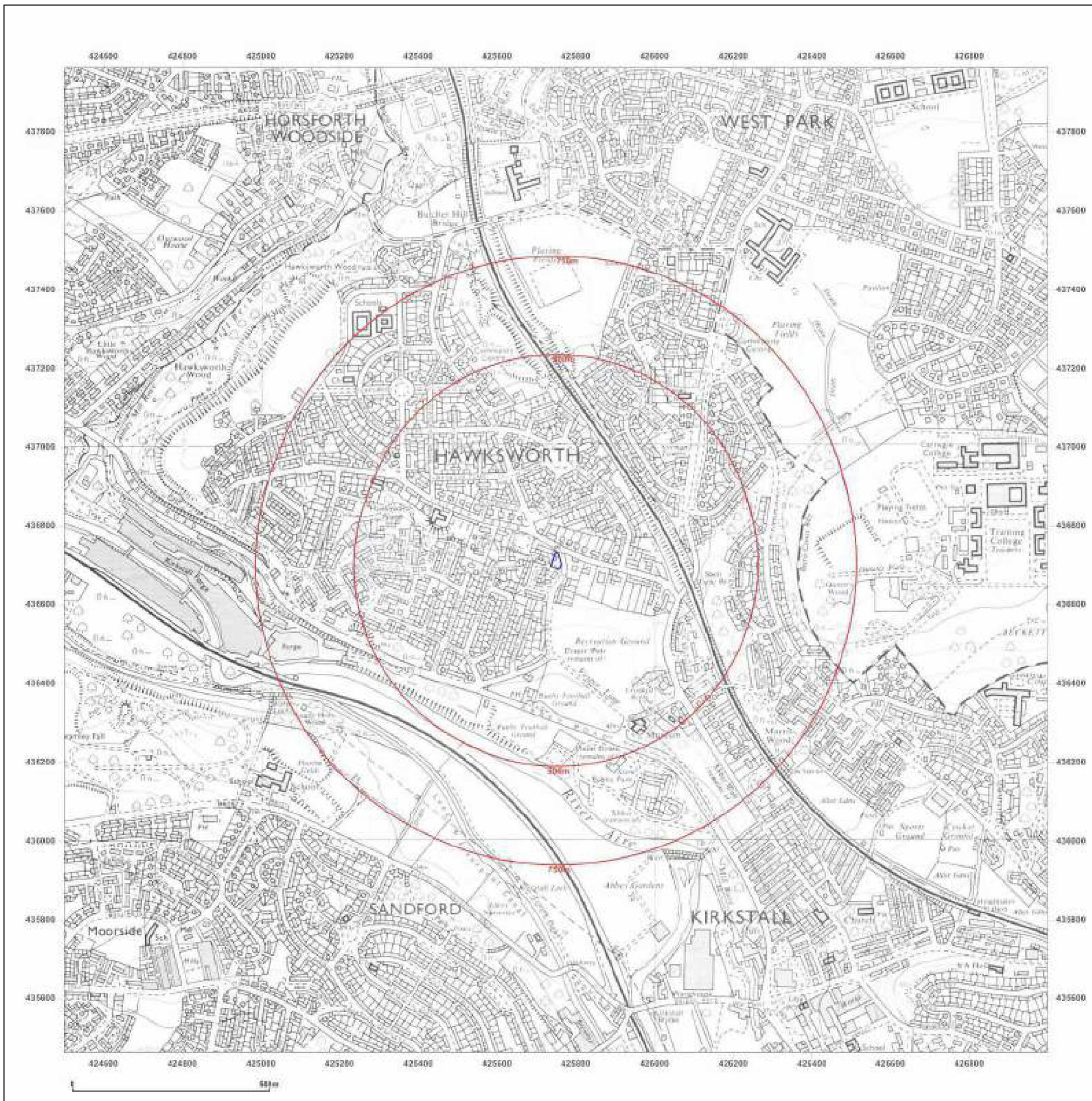
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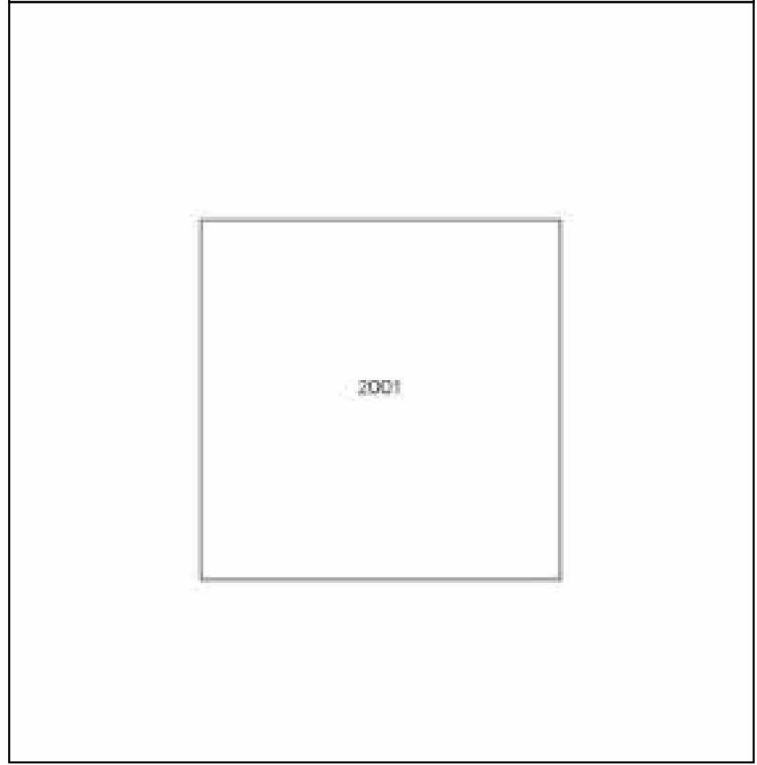
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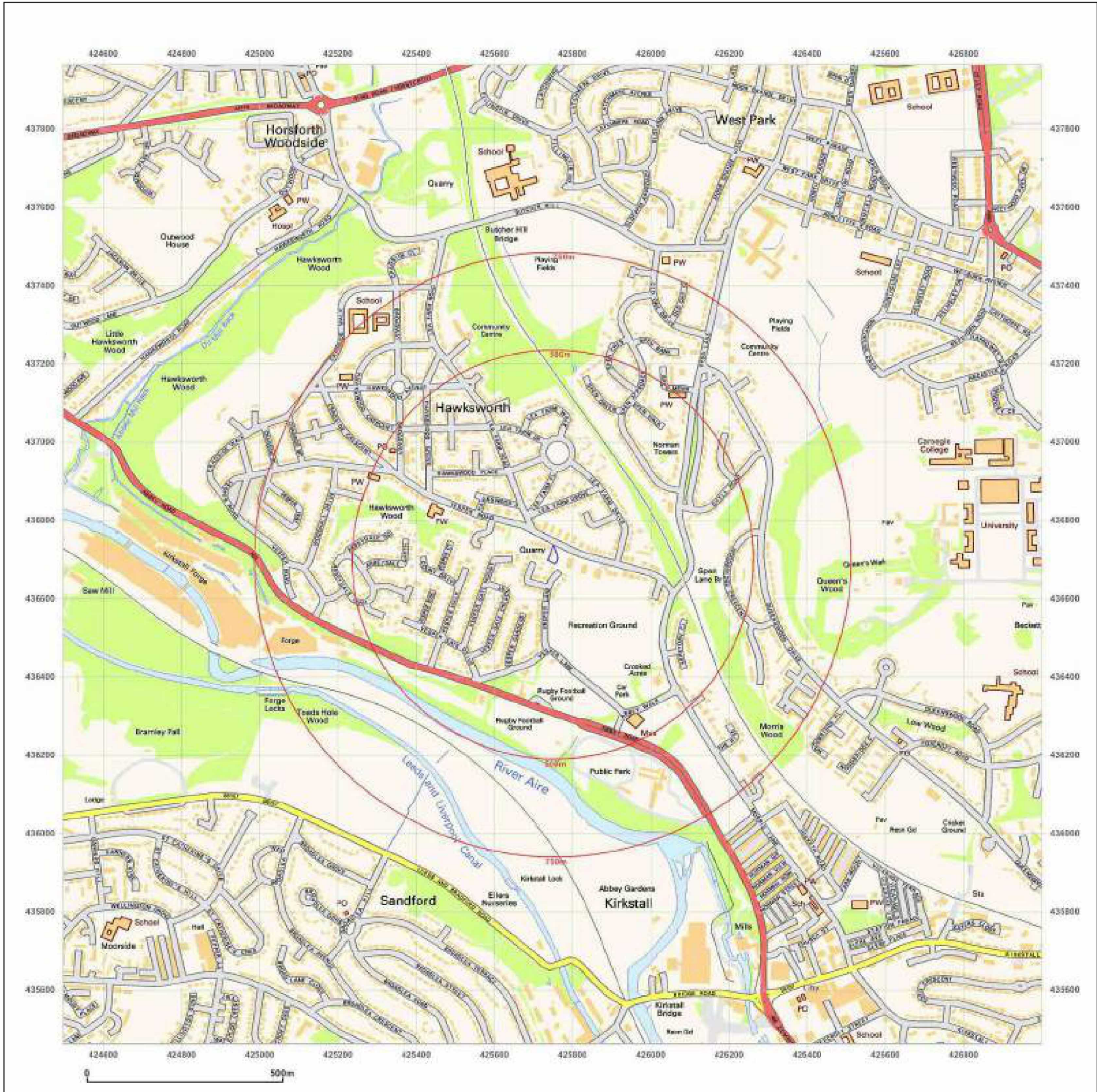
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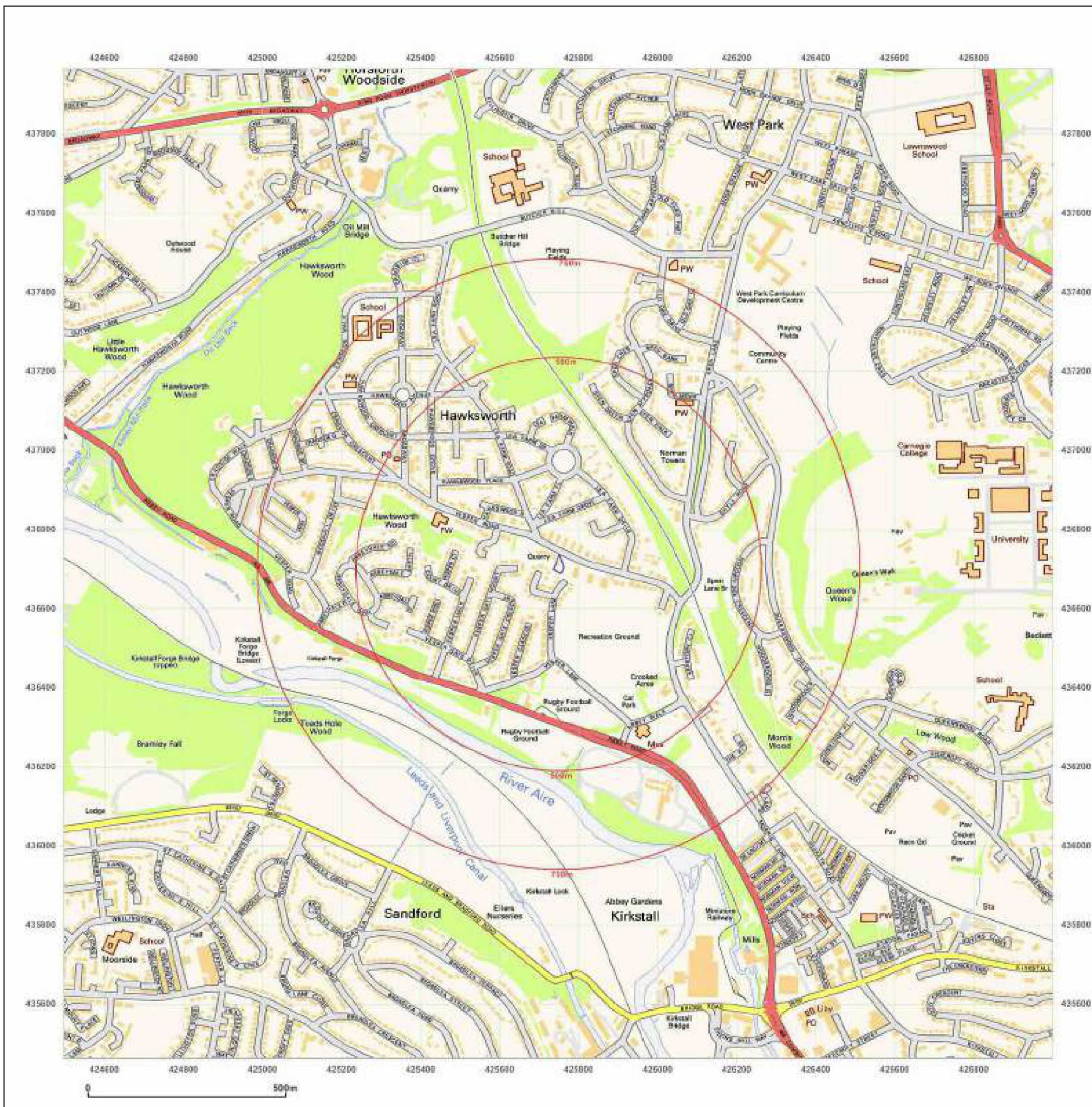
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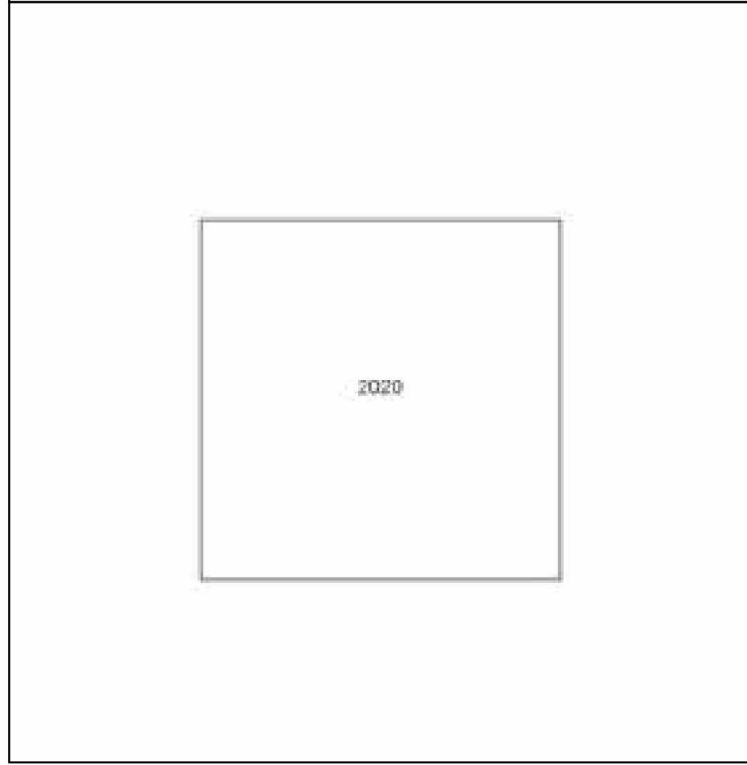
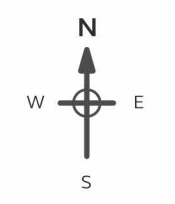
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**Report Ref:** GS-6567187  
**Grid Ref:** 425749, 436712

**Map Name:** National Grid

**Map date:** 2020

**Scale:** 1:10,000

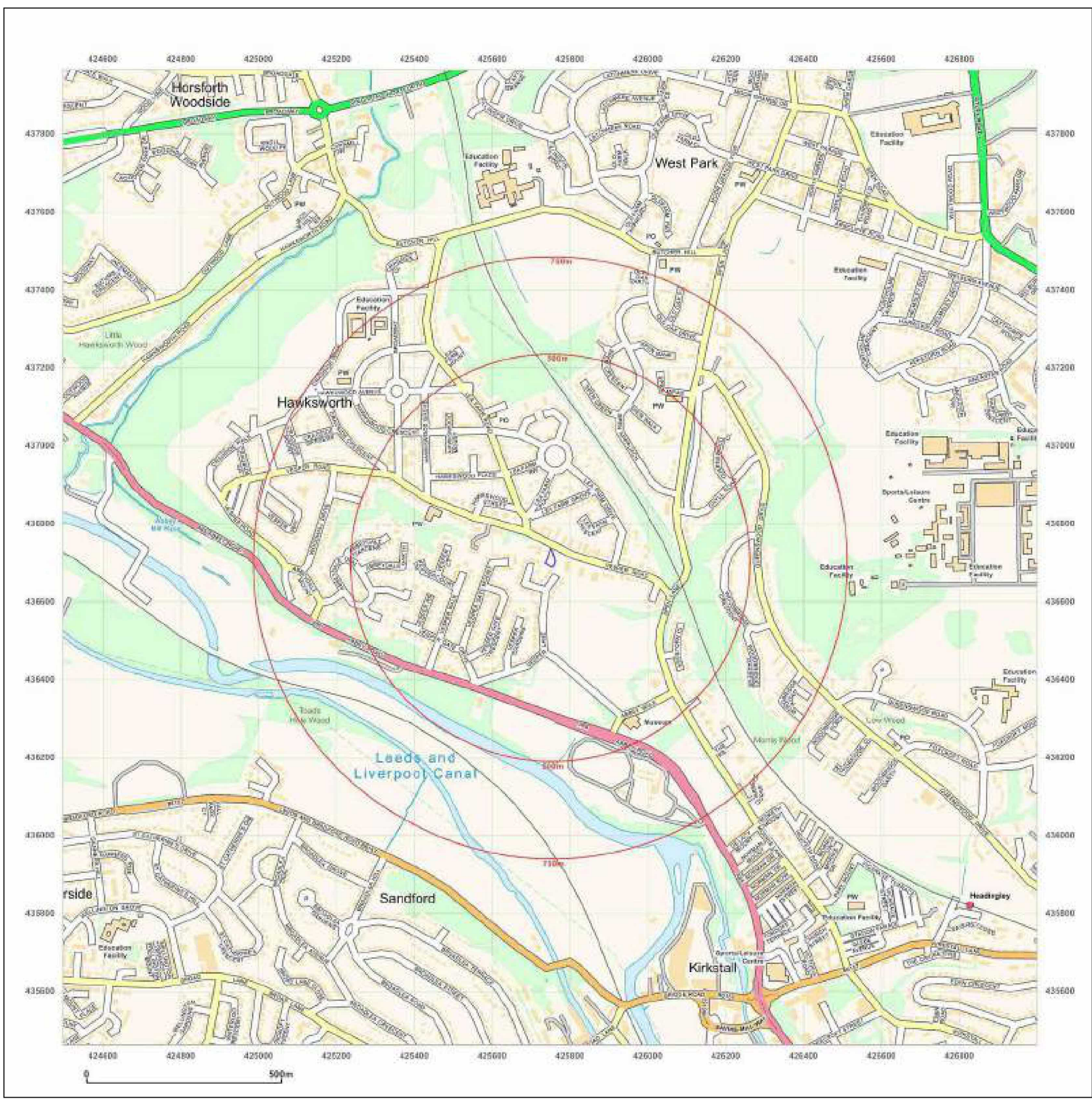
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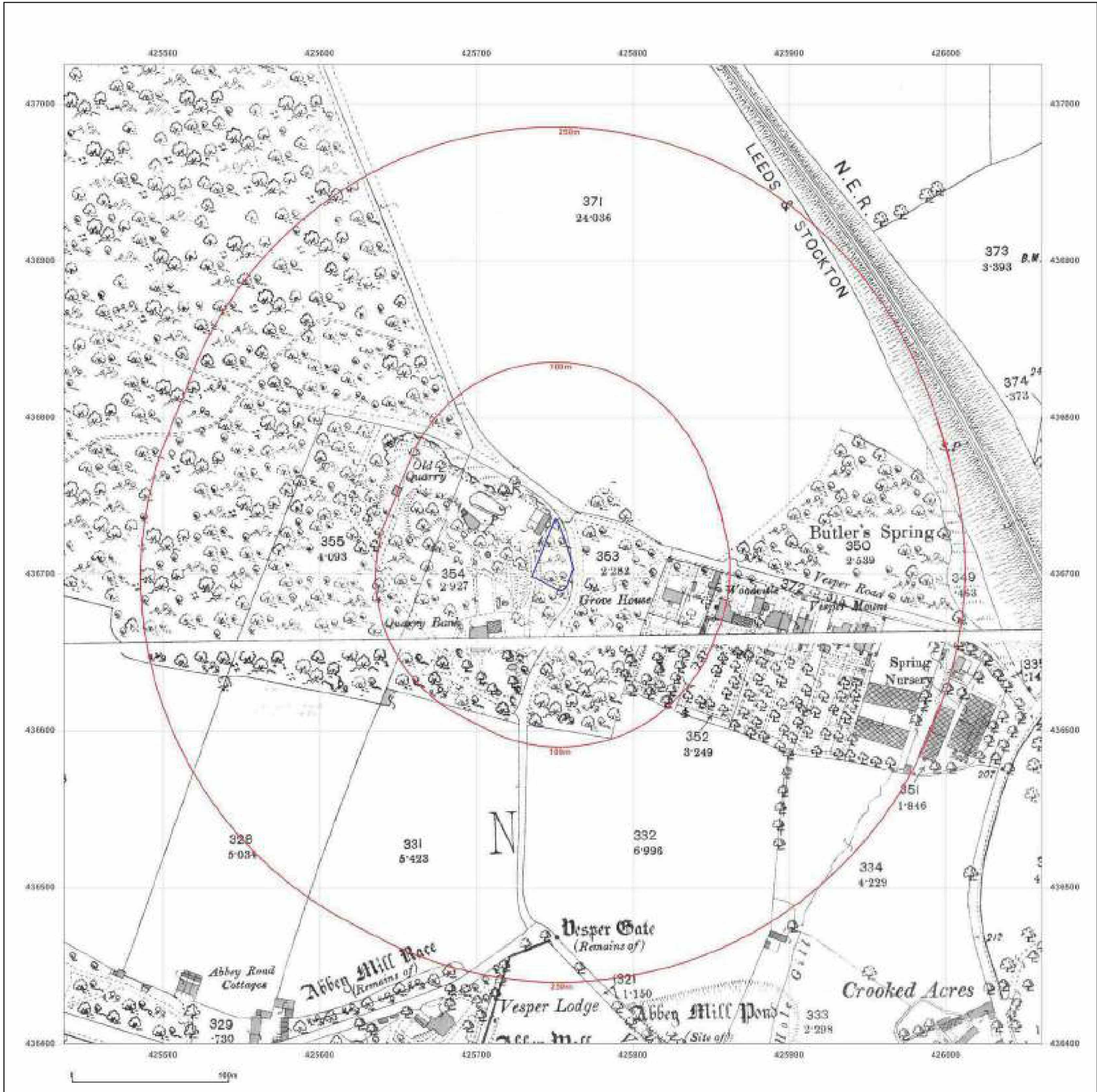




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**Client Ref:** B23391  
**Report Ref:** GS-6567187  
**Grid Ref:** 425749, 436712

**Map Name:** County Series  
**Map date:** 1892  
**Scale:** 1:2,500  
**Printed at:** 1:2,500



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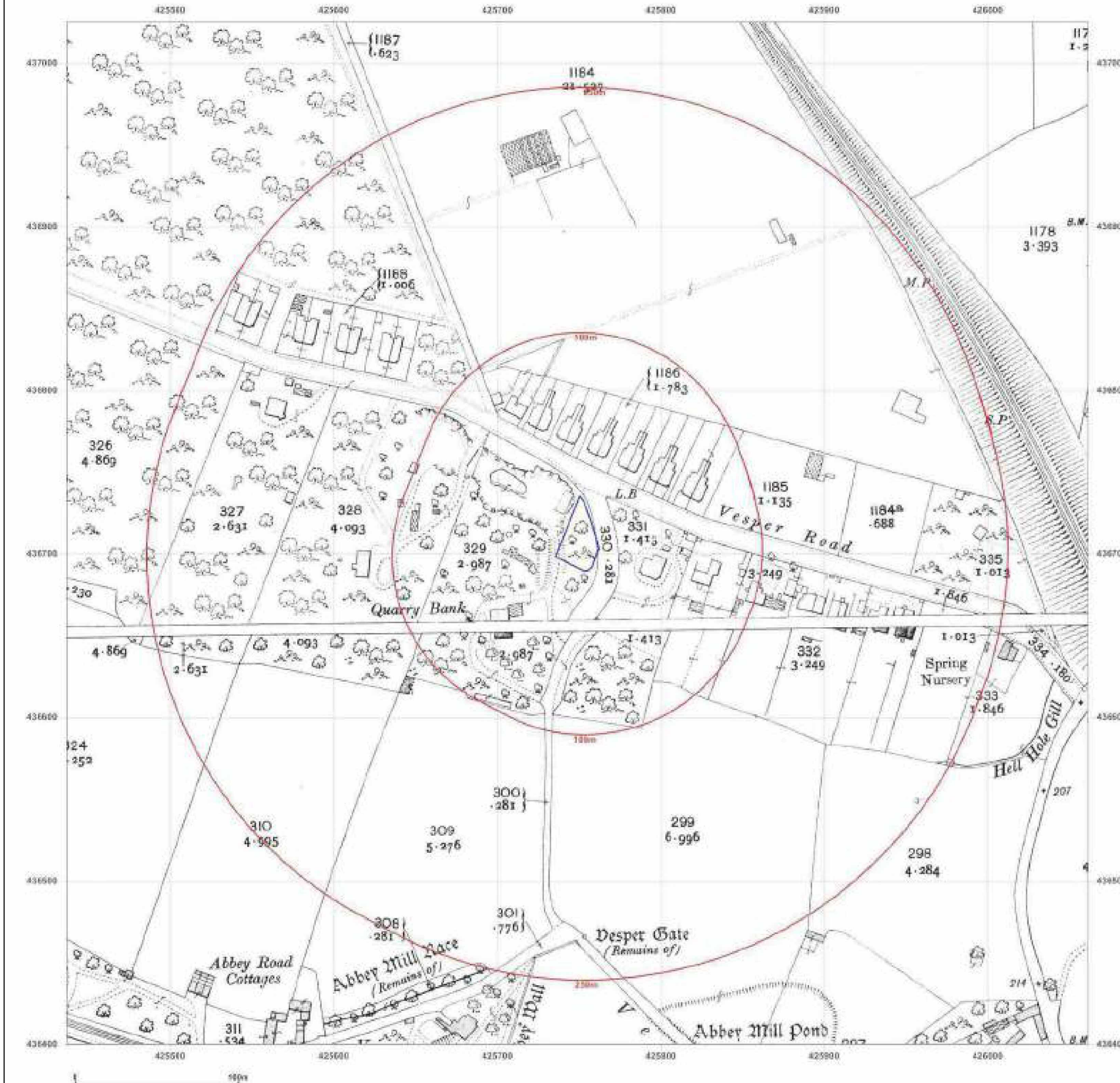
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**Grid Ref:** 425749, 436712

**Map Name:** County Series

**Map date:** 1908

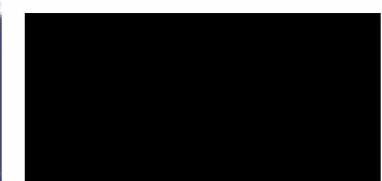
**Scale:** 1:2,500

**Printed at:** 1:2,500



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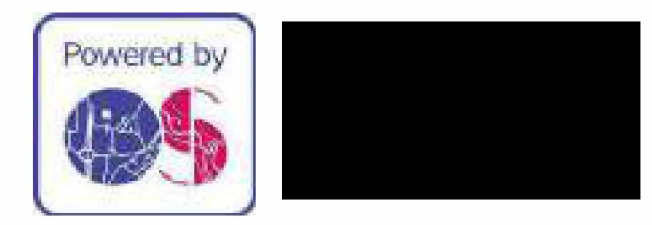
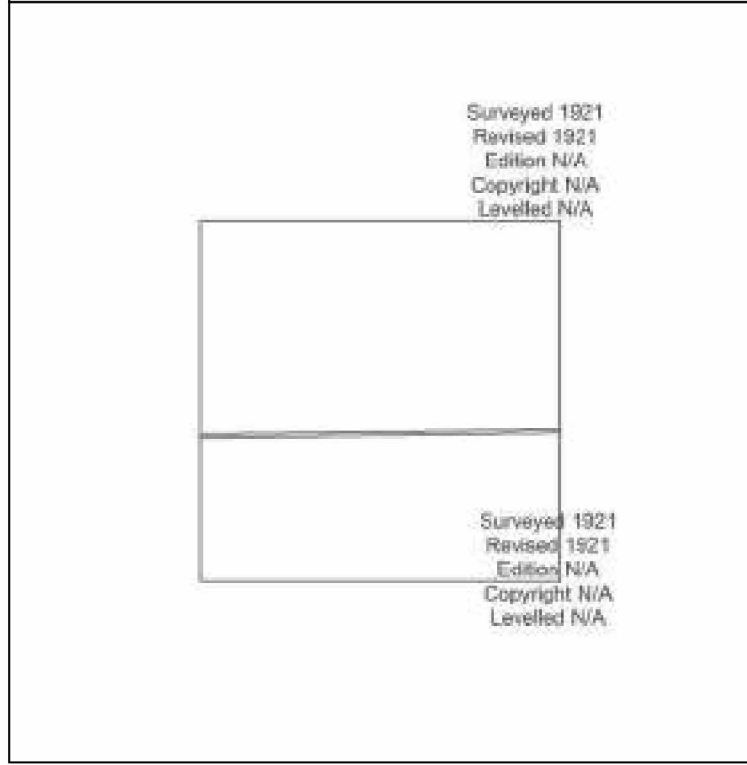
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**Map Name:** County Series

**Map date:** 1921

**Scale:** 1:2,500

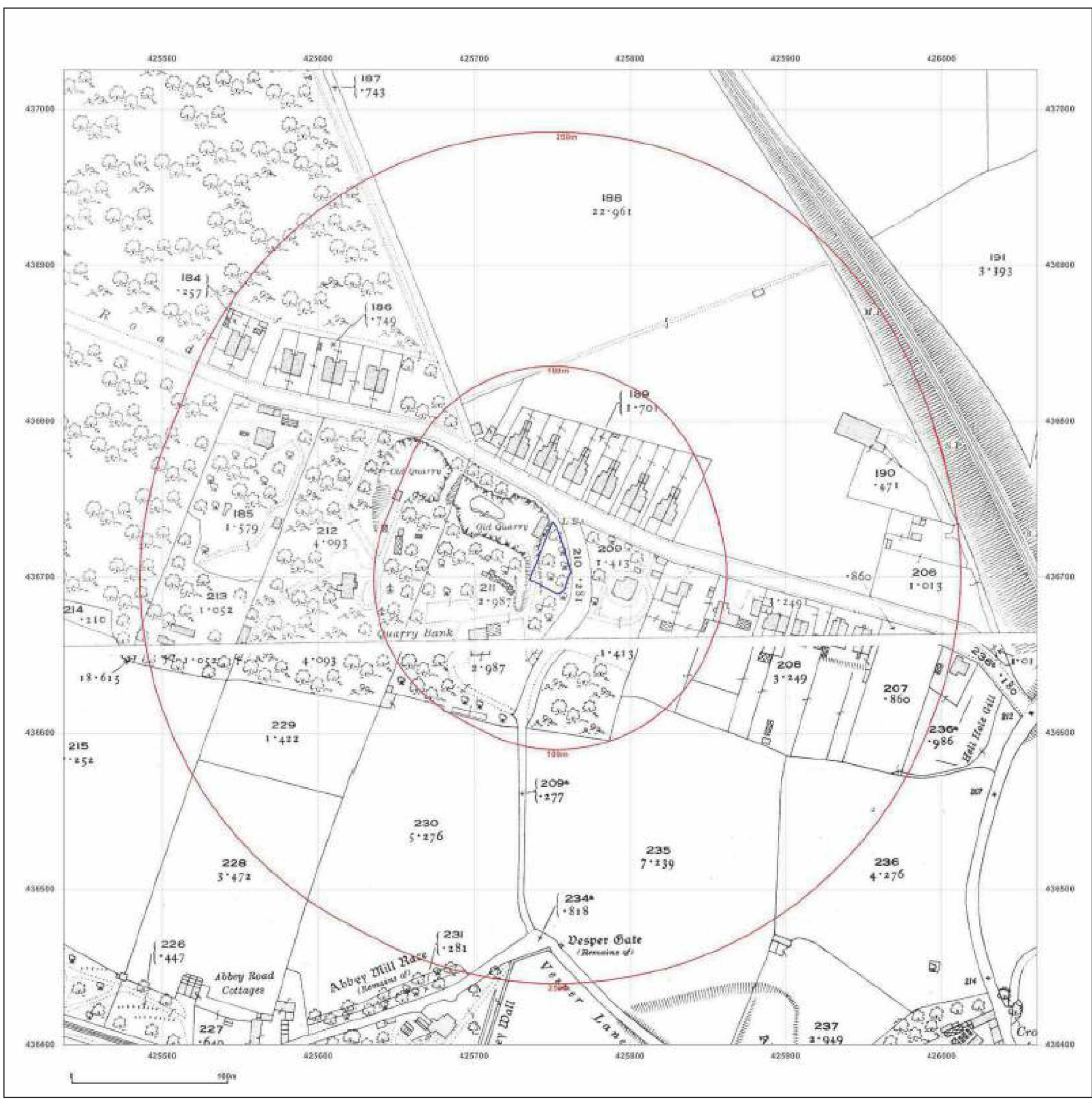
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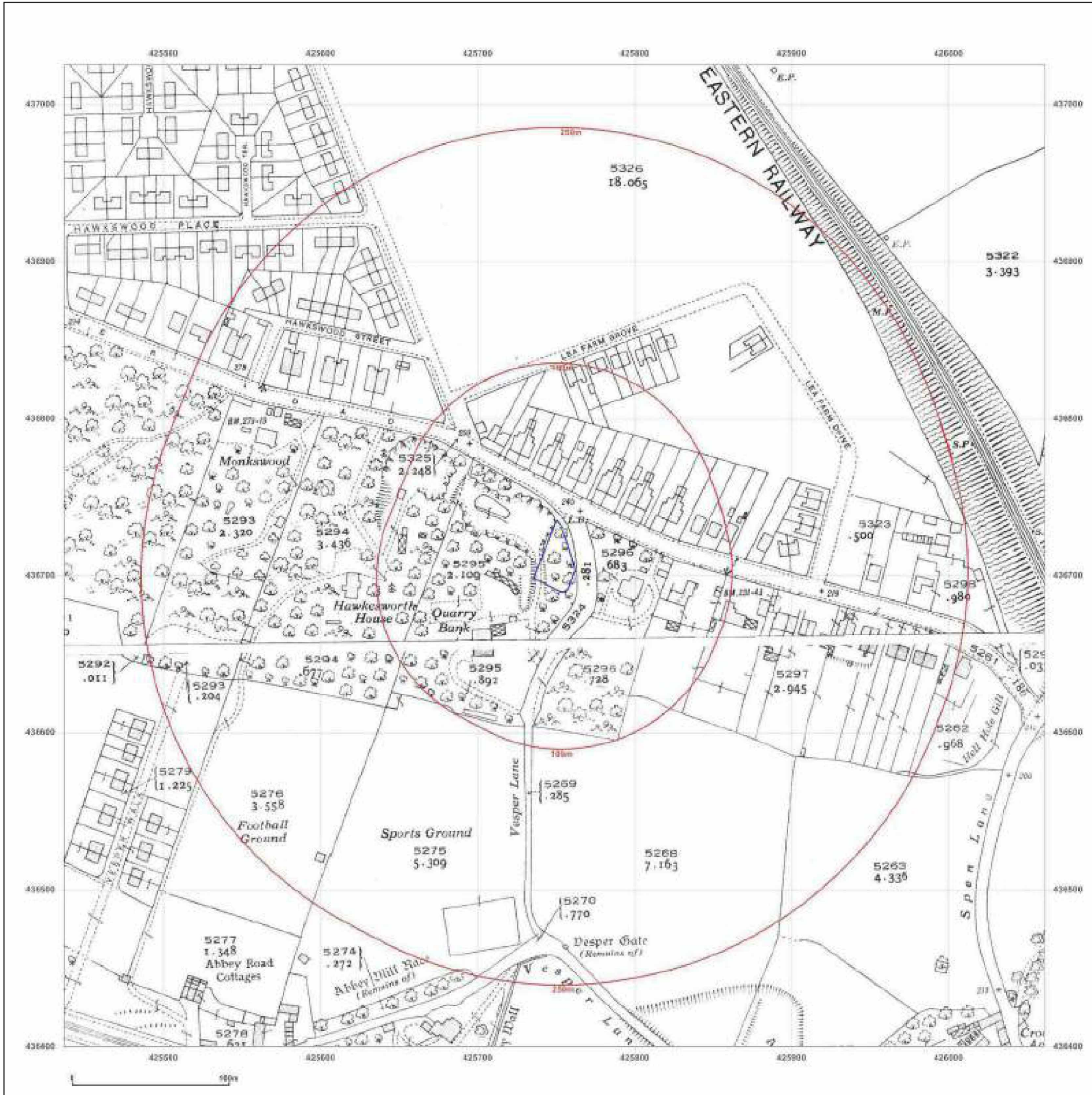
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**Map Name:** County Series

**Map date:** 1934

**Scale:** 1:2,500

**Printed at:** 1:2,500



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**Client Ref:** B23391  
**Report Ref:** GS-6567187  
**Grid Ref:** 425749, 436712

**Map Name:** National Grid

**Map date:** 1953-1954

**Scale:** 1:1,250

**Printed at:** 1:2,000



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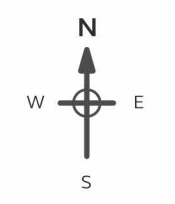
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**Map Name:** National Grid

**Map date:** 1954

**Scale:** 1:1,250

**Printed at:** 1:2,000



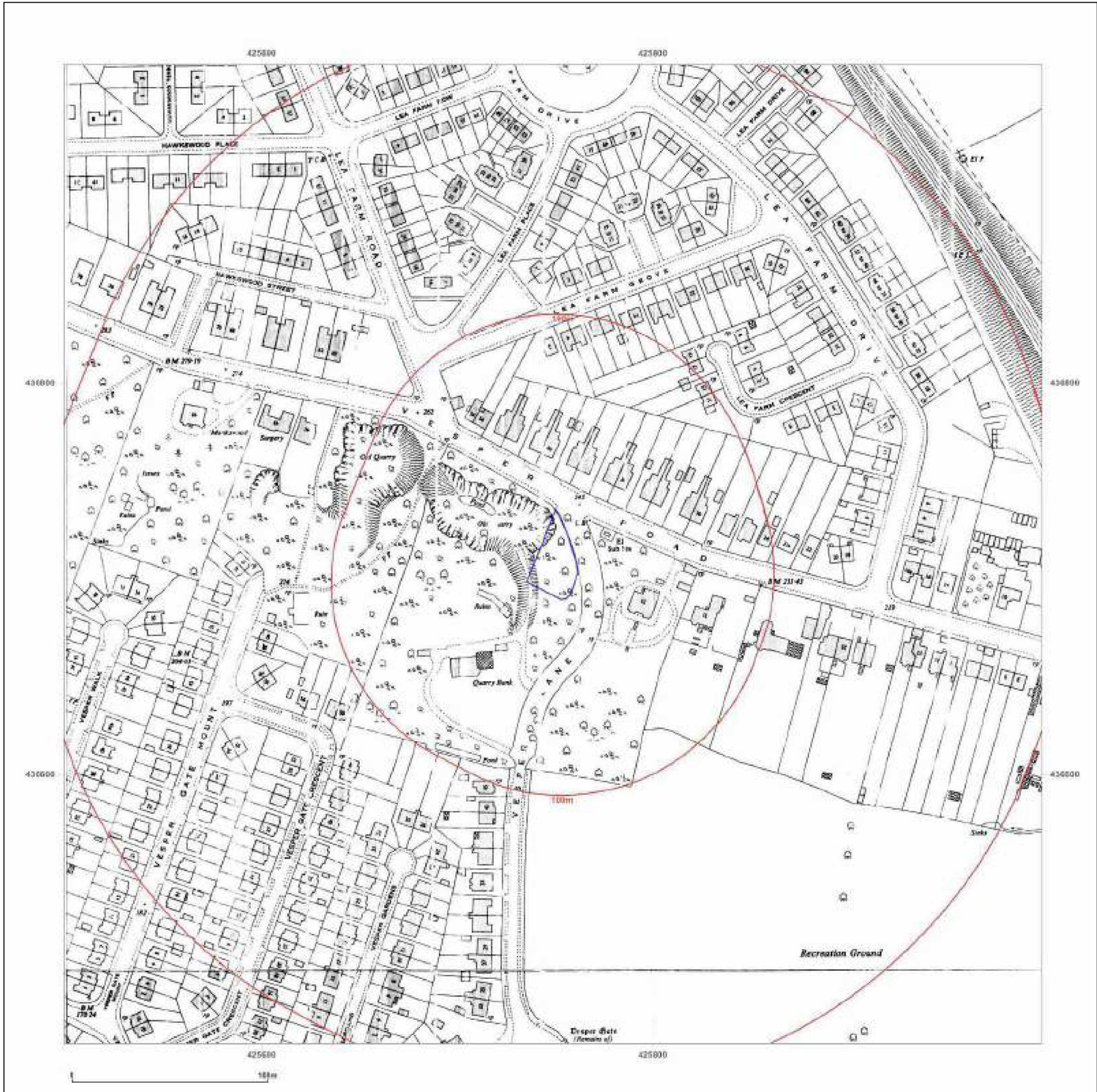
Surveyed N/A	Surveyed N/A
Revised N/A	Revised N/A
Edition N/A	Edition N/A
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**Client Ref:** B23391  
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**Map Name:** National Grid

**Map date:** 1953-1954

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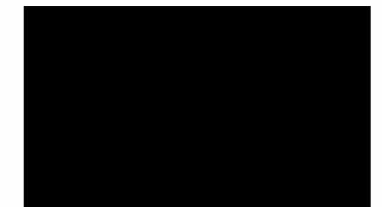


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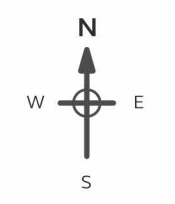
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**Map Name:** National Grid

**Map date:** 1957-1962

**Scale:** 1:1,250

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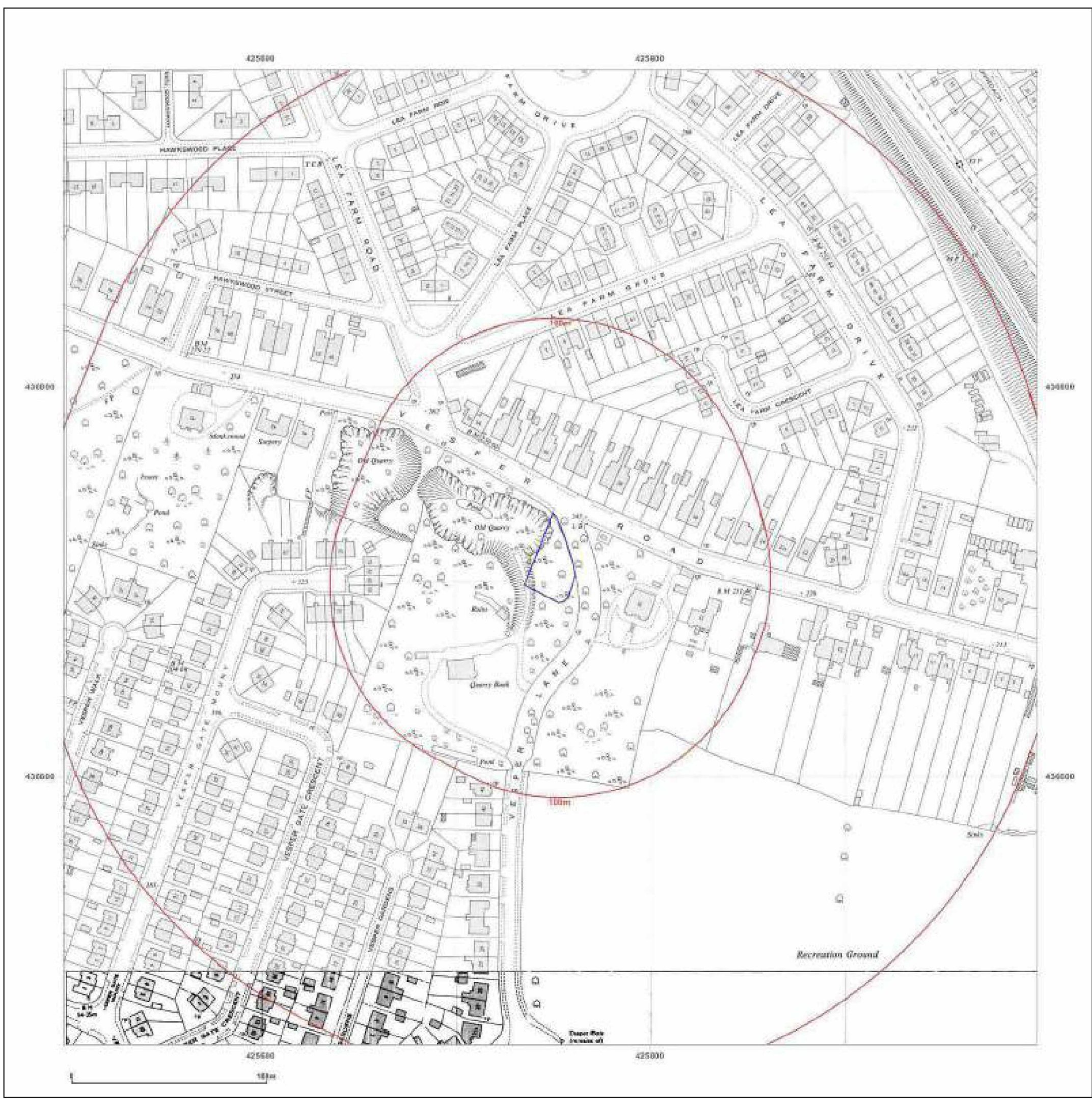
Surveyed 1954 Revised 1961 Edition N/A Copyright 1962 Levelled 1957	Surveyed 1953 Revised 1960 Edition N/A Copyright 1960 Levelled 1957
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**Client Ref:** B23391  
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**Map Name:** National Grid

**Map date:** 1962-1967

**Scale:** 1:2,500

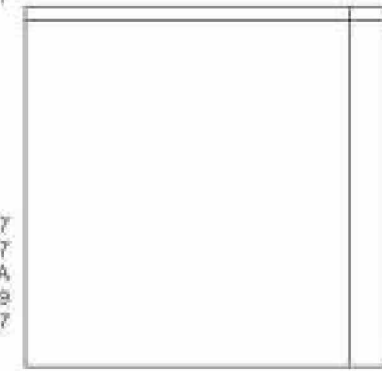
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**Client Ref:** B23391  
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**Map Name:** National Grid

**Map date:** 1968-1973

**Scale:** 1:1,250

**Printed at:** 1:2,000

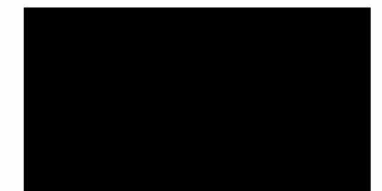


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**Client Ref:** B23391  
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**Grid Ref:** 425749, 436712

**Map Name:** National Grid

**Map date:** 1993

**Scale:** 1:1,250

**Printed at:** 1:2,000

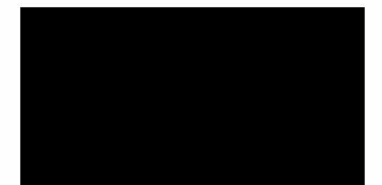


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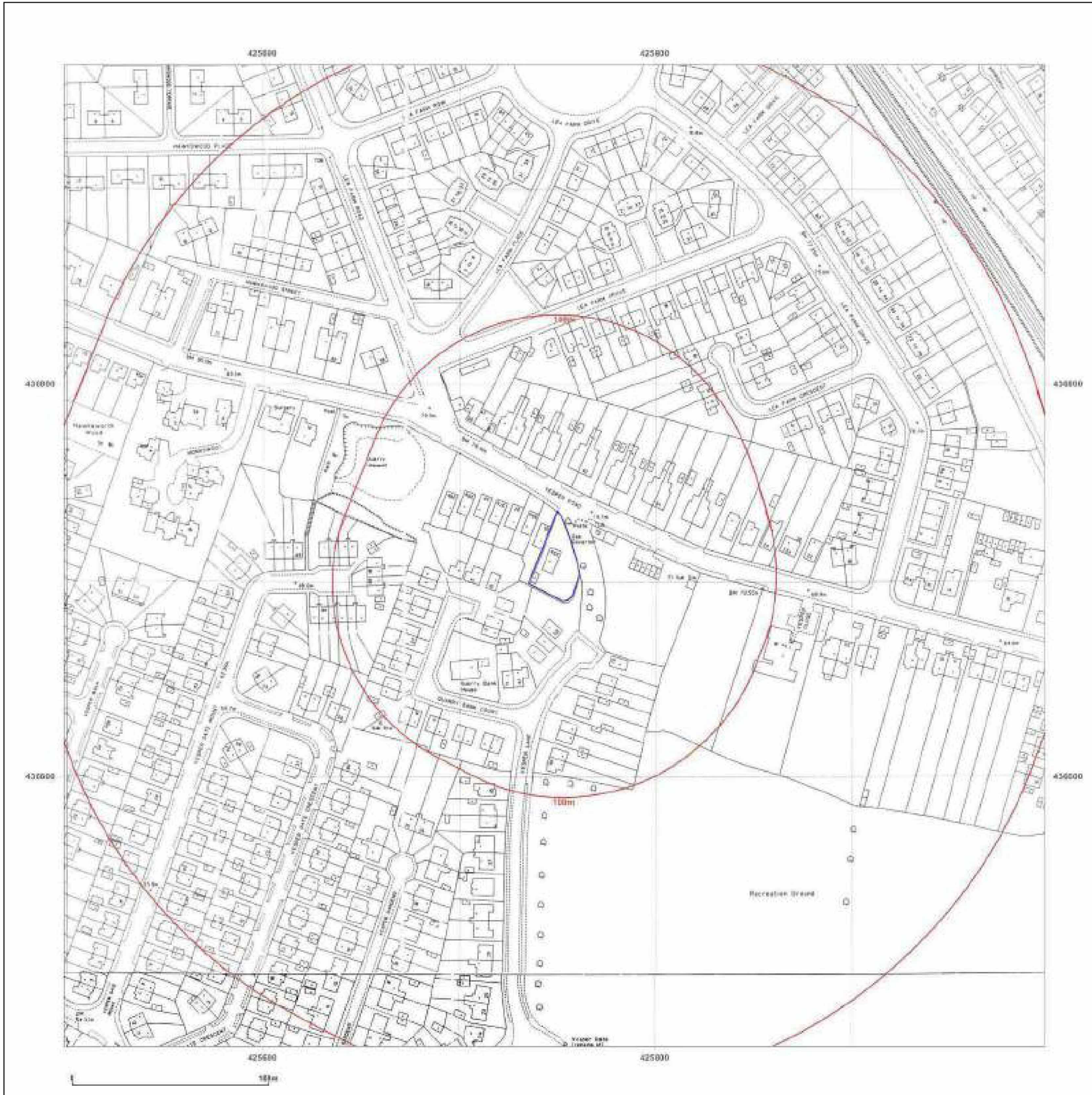
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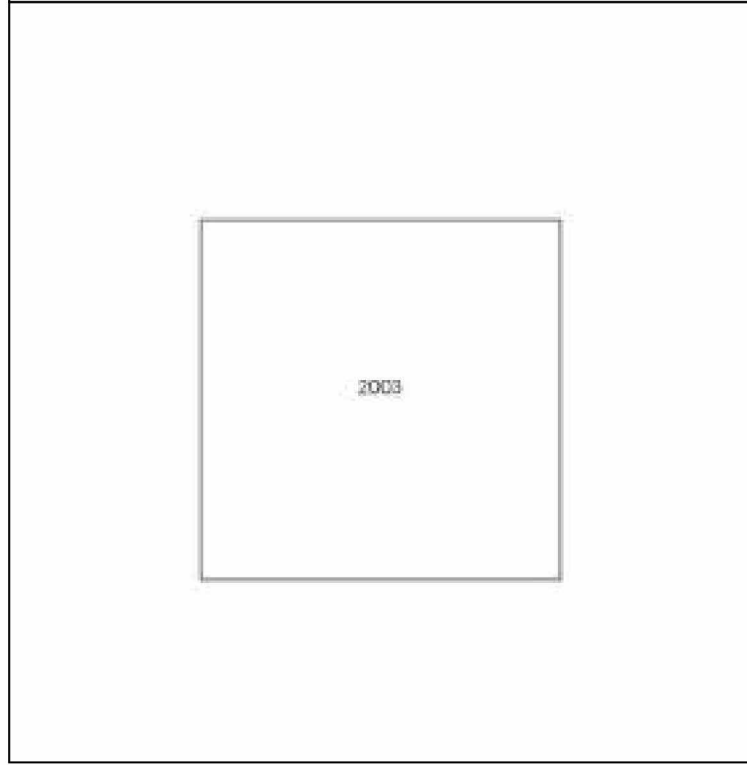
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**Map Name:** LandLine

**Map date:** 2003

**Scale:** 1:1,250

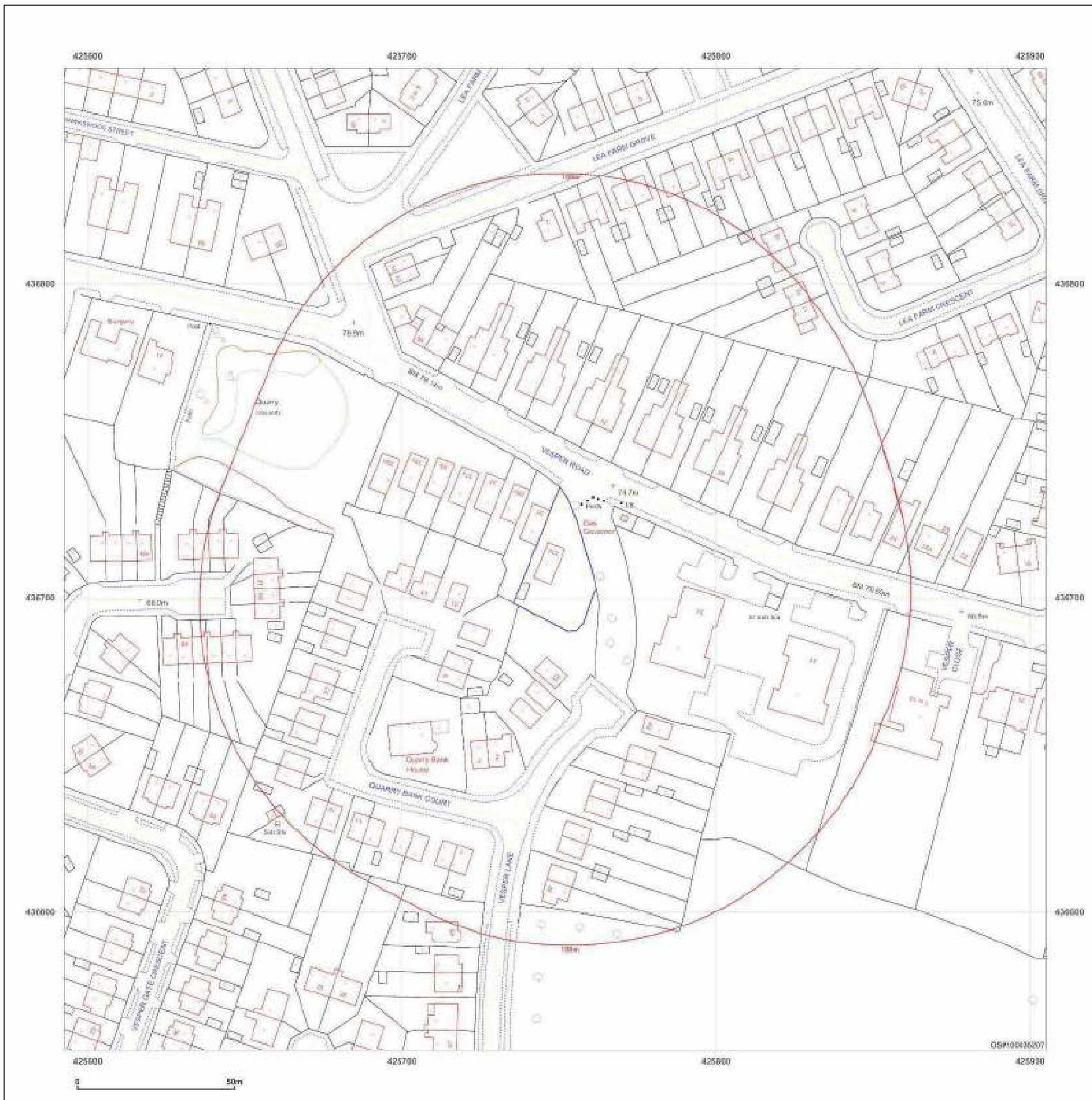
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